

LEVEL II
ENVIRONMENTAL SITE ASSESSMENT
ST. JOHNS RIVERFRONT PROPERTY
PORTLAND, OREGON

Prepared for
GRAYCO RESOURCES, INC.
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EXECUTIVE SUMMARY

The St. Johns Riverfront property is located in St. Johns, Oregon, south of the St. Johns Bridge. The site, approximately 26 acres in size, is bounded on the south by the Willamette River, the north by the Union Pacific Railroad, the east by the Burlington Northern Railroad, and the west by North Richmond Avenue. The property is underlain by dredged river sands, and alluvial silts, sands, and gravels. The shallow water table beneath the property is in direct hydraulic connection with the Willamette River. Ground water flow in this aquifer is reportedly toward the river.

The property is in an area of historic industrial activity. Former industries include a large lumbermill, Port of Portland shipyards, a plywood mill, and a large cooperage facility. Currently, the site is undeveloped. Neighboring industries consist of a steel distribution company and a wood treating company.

Field investigations included conducting a geophysical site survey and collecting 66 soil and 22 ground water samples from test borings and hand augered borings. *13 Test + 4 Hand Borings*

The geophysical investigation revealed that concrete foundations, concrete floors, buried water lines, and drainage systems still remain. As far as could be determined, all the buried water lines are disconnected from the off-property supply. No underground storage tanks were detected. An underground petroleum pipeline is located in the Union Pacific railroad right-of-way.

Twenty-five soil samples (composite and discrete) were analyzed. The type and number of analyses varied from sample to sample, but included testing for polychlorinated biphenyls (PCBs), total

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organic halogens (TOX), oil and grease, benzene, toluene, ethylbenzene and xylene (BTEX), and various petroleum hydrocarbons.

No PCBs were detected in soils. Minor concentrations of TOX (commonly associated with chlorinated solvents) were detected in 7 samples. All 7 of these samples contained TOX concentration at or slightly above the detection limit of 1 mg/kg. Oil and grease was detected in four samples ranging in concentrations from 0.052 to 0.068 percent. No BTEX, gasoline, or diesel was detected. The concentrations of contaminants detected in the soils at the St. Johns Riverfront property probably do not constitute significant contamination or a threat to human health or the environment.

Ground water was analyzed for polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PAHs), pentachlorophenol, priority pollutant metals, volatile and semi-volatile organics, and pesticides. A hydrocarbon scan was conducted on one ground water sample with a visible surface sheen.

Low concentrations of PCBs were detected in two ground water samples. An oil sheen was also noted on the same two samples and on three other ground water samples from the same general area. Follow-up sampling and analysis in this same area showed no detectable levels of PCBs in the ground water or oil film. The initial detections may have been due to false readings, minor localized contamination, or contamination introduced during drilling, sample collection, or laboratory analysis. The oil sheen was determined to be from a petroleum product similar to 30 weight motor oil.

The PAH analysis has 15 target compounds. These compounds, along with pentachlorophenol and selected heavy metals, are often associated with the wood treating industry. No PAH or

pentachlorophenol compounds were detected in any of the samples tested, and dissolved heavy metal concentrations were all below drinking water standards.

Twelve ground water samples were analyzed for TOX. TOX is generally used as a screening tool to detect chlorinated solvents and pesticides. All 12 samples had concentrations of less than 50 ug/L. Concentrations less than 50 ug/L (10 times the detection limit) are generally considered to be unreliable as indicators of significant contamination. For thoroughness of evaluation, 4 ground water samples, collected from borings adjacent to or in the same general area as those borings with high TOX values, were subjected to more detailed analysis for volatile organics, semi-volatile organics, and pesticides. No contaminants were detected in any of these samples.

Based on the field investigation and laboratory analysis completed for this study, the site has not been significantly impacted by past site activities or from contamination resulting from offsite sources.

1.0 INTRODUCTION

1.1 PURPOSE

Sweet-Edwards/EMCON, Inc. (SE/E) was retained by Grayco Resources, Inc. (Grayco) to complete an environmental site assessment of the St. Johns Riverfront property. This report combines the information presented in the SE/E Level I report (9/29/88) with the findings from the December 1988 and January 1989 field investigations.

The site, shown on Figures 1 and 2, is located along the Willamette River between North Richmond Avenue (south of the St. Johns Bridge) and the Burlington Northern Railroad Bridge. A legal description of the site is presented as Appendix A.

1.2 SCOPE OF WORK

The site assessment was comprised of those tasks and subtasks described in SE/E's two proposals dated August 30, 1988 and November 18, 1988, and of a follow-up drilling and sampling program. The following is a summary of the work completed by SE/E for the preparation of this document.

- o Site inspection;
- o Interview with past mill employees;
- o Review of United States Environmental Protection Agency (EPA) and Oregon Department of Environment Quality (DEQ) files;
- o Review of aerial photographs from the United States Army Corp of Engineers (Corp) and Northern Lights Studio;
- o Review of records from the Oregon Historical Society, City of Portland, city directories, Oregon Division of Lands, railroad companies and the Portland Development Commission (PDC);

- o Review of Oregon water well logs;
- o Review of local geology, hydrology and hydrogeology literature;
- o Electromagnetic conductivity search of selected areas to identify potentially contaminated areas and underground utilities;
- o Completion of an initial field investigation consisting of drilling of 13 test borings, hand augering of 4 borings, and collection of 22 soil and 14 ground water samples;
- o Laboratory analysis of 21 soil and 14 ground water samples for a variety of organic and inorganic constituents;
- o Subsequent drilling of 6 additional borings and collection of 4 soil and 8 ground water samples.
- o Analysis of these additional samples for a variety of organic and inorganic contaminants.
- o Preparation of a final report presenting the findings of the investigation.

1.3 DISCLAIMER

The findings and conclusions reported herein are based upon interviews, data collection, records, reviews, and standard interpretive techniques as referenced. All work was carried out by or under the direction of a professional geologist. All work was completed to the normal standards of the profession and in accordance with generally accepted geological principles and practices. If data or conditions at the site differing materially from those indicated in this report are known or become available, Sweet-Edwards/EMCON, Inc., should be contacted promptly to facilitate a review and investigation of those conditions in order to determine if any modifications of findings, conclusions, and/or recommendations are warranted.

2.0 ENVIRONMENTAL SETTING

2.1 GEOLOGY/GEOMORPHOLOGY

No well logs, boring records, foundation studies or other sources of subsurface information for the site were identified during the course of the Level I investigation. However, subsurface data for the general area of the site was obtained from well logs dating back to 1945 and from professional papers and reports (Section 7.0). In addition, an Environmental Contamination Site Assessment (CH₂M Hill, 1987) document prepared for McCormick and Baxter Creosote Company (located adjacent to the eastern boundary of the study area) was reviewed. As part of the Level II investigation, SE/E completed 19 test borings ranging in depth from 11.5 to 35 feet at the site. Four shallow hand augered borings were also completed. All boring data was assimilated in an effort to define shallow subsurface conditions.

The St. Johns Riverfront property is situated on dredged river sands and terrace deposits along the Willamette River (Figure 1). It is bounded by the Willamette River to the south and a prominent ridge (elevation approximately 140 feet MSL) on the north.

The geologic units that typically underlie the site area are from youngest to oldest:

- o Fill
- o Recent alluvium
- o Lacustrine sediments
- o Troutdale Formation
- o Sandy River mudstone
- o Columbia River Basalt

Much of the site property has been created by the placement of sand fill in the shallow areas along the bank of the Willamette River. Although the source of the fill material has not been determined, it appears to consist primarily of dredged river sands. It is estimated that the thickness of the fill ranges from a few feet to 20 feet onsite.

The recent alluvium and lacustrine sediments are comprised of clays, silts, sands and gravels. The Troutdale Formation is comprised of well cemented to poorly cemented gravels with lenses and interbeds of siltstone and sandstone. The Sandy River mudstone consists of several hundred feet of poorly consolidated to well consolidated silts and fine sands with lesser amounts of clay and gravel. The total thickness of sedimentary units underlying the site is unknown. These sedimentary units are underlain at depth by an undetermined thickness of flow basalts of the Columbia River Group.

2.2 HYDROLOGY

The northwesterly flowing Willamette River is the major drainage in the area and forms the southern boundary of the subject property. There are no surface streams that drain the site. However, it is likely that surface storm water from the terrace to the north of the site flows onto the property either as surface sheet flow or as discharge from a small channel feature that dissects the bluff above the eastern end of the property.

A small river embayment is present at the eastern end of the site (Figure 2). This feature has formed or was created on the downstream side of the railroad bridge fill that forms the eastern boundary of the site. Historic industrial use of this river embayment is discussed in subsequent sections of this report.

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2.3 HYDROGEOLOGY

The hydrostratigraphic units underlying the site are believed to be the same as the geologic units described in Section 2.1, as follows:

- o Fill sands
- o Recent alluvium
- o Lacustrine sediments
- o Troutdale Formation
- o Sandy River mudstone
- o Columbia River Basalt

A shallow aquifer exists at the site in the fill sands and recent alluvium. This aquifer is in direct hydraulic connection with the Willamette River. Ground water from the shallow aquifer generally flows toward the Willamette River. During periods of high river levels, however, bank storage can occur, and the ground water flow direction may be temporarily reversed over a limited area. Ground water flow patterns at the site have been interpolated from a review of hydrogeologic reports for neighboring properties, regional geologic reports, and water well construction records.

A deeper aquifer exists beneath the site in the Troutdale Formation. The Troutdale Formation consists of interbedded sands and gravels, and is perhaps the most prolific aquifer in the Portland area. Many production wells are completed in the Troutdale aquifer. Appendix B contains some of the water well logs for wells located within a mile radius of the site. The degree of hydraulic connection between the shallow aquifer and the underlying Troutdale aquifer is unknown.

There is no known current beneficial use of shallow or deep ground water onsite.

3.0 LAND USE

Existing or potential environmental liabilities associated with any piece of property are most commonly the result of current or past land use practices on or near that property. Therefore, an understanding of the history of land use on, and adjacent to, a site is critical to the assessment of the environmental liabilities that may be present on that site. Current and past land uses on and near the St. Johns Riverfront site are discussed in the following paragraphs.

3.1 CURRENT LAND USE

The St. Johns Riverfront site is currently undeveloped. The Current Property Occupant Map (Figure 3) and the most recent aerial photograph show the site conditions as of 6/24/88. The site is unfenced and much of it is covered with trees and brush. Land use in the area is limited to occasional dirt bike riding, illegal dumping of domestic garbage, and intermittent railroad traffic along the Union Pacific (UP) and Burlington Northern (BN) railroad lines. In addition, two squatters camps were observed on the property. One camp consisted of several tents located in the forested area on the west end of the site, and the second camp was a small trailer located at the northeast corner of the property.

Although the property is currently undeveloped, evidence of past industrial activity is visible over much of the site. Steel reinforced concrete foundations, floor slabs, bunkers, and tank platforms are common in the central and eastern portions of the property. Concrete, metal slag, and building debris (possibly the remains of burned out or demolished structures that previously occupied the site) were observed along the shoreline and bank on the central and western portions of the property. Underground pipes, apparently associated with past industrial

activities are visible along the river bank near the east end of the site, and a large diameter, partially buried, concrete pipe and intercept, which appears to discharge to the river, was identified in the central portion of the site. City utility records were researched, but no information was found that identified the purpose of this concrete pipeline (storm sewer, sanitary sewer, wastewater, etc.). Piers, piles, and log skids in various states of decay, and 1-inch to 2-inch diameter anchoring cables, are present along much of the shoreline. A 100+ foot long wooden ship hull is aground in the embayment on the east end of the site. The dirt roadway system that served this industrial area is identifiable, although it is, for the most part, overgrown or severely eroded.

3.2 PAST LAND USE

The St. Johns Riverfront site was an active industrial area. Aerial photographs reviewed and the Historic Property Occupant Map (Figure 4) show the intense level of industrial development during the late 1930s and early 1940s. A list of historic aerial photographs for the site is presented in Table 1. Selected photographs from this list were reviewed by SE/E as part of this investigation. A list of property occupants for the site and the surrounding area is provided in Appendix C and the boundaries of the principal industries that occupied the site are shown on Figure 4. Information on these industries is presented in Table 2.

3.3 POTENTIAL ENVIRONMENTAL CONCERNS

The following potential environmental liabilities and concerns were identified during the Phase I investigation:

- o Leaks or spills from railcars using the Union Pacific (UP) railroad tracks on the northern boundary of the site or the

Burlington Northern tracks on the eastern boundary of the site;

- o Leakage of product from the UP diesel pipeline located along the northern boundary of the property;
- o Localized soil contamination from illegal dumping at various locations on the property and from the waste disposal practices at the squatter's camps;
- o Movement of ground water contamination (creosote, pentachlorophenol, and heavy metals such as arsenic, copper, and chrome) from the McCormick and Baxter Creosote Co. (McCormick and Baxter) property;
- o Leaks, spills or disposal of hydrocarbons or hazardous waste from machine shops, electrical shops or product storage areas of industries that occupied the site.

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Based on discussions with railroad representatives and a review of regulatory agency files there have been no reports of leaks or spills associated with the rail lines or the diesel pipeline located north of the project site.

The illegal dumping that has occurred at several localities on the property appeared to involve the disposal of typical household garbage, used furniture, auto parts, and other generally non-toxic or non-hazardous materials. It is likely that any environmental liabilities associated with this dumping, or with the disposal of waste at the squatter's camps would be minimal and very localized.

Extensive soil and ground water contamination caused by wood treating and preserving compounds has been detected at the McCormick and Baxter property located adjacent to the eastern boundary of the project site. DEQ officials have stated that the contaminated ground water is moving toward the Willamette River and has not moved onto adjacent properties. They further stated that the contamination does not constitute a health hazard to those not involved in work on the site (Gauntt, 1988). A more

detailed discussion concerning the McCormick and Baxter facility is included in Section 6.0.

The field and laboratory work completed for the Level II investigation was directed toward defining these potential environmental liabilities. This work is described in Sections 4.0 and 5.0.

4.0 FIELD INVESTIGATION PROCEDURES

Prior to initiation of the onsite subsurface investigation, a Site Safety and Operations Plan was developed, and a geophysical survey of portions of the property was completed.

A total of 62 soil samples and 14 ground water samples were collected from the site in December 1988. Fifty-eight of the 62 soil samples and 13 of the 14 ground water samples were obtained from 13 test borings. The balance of the samples were obtained from four hand augered borings.

*Hand
augered
borings?*
An additional 4 soil samples and 8 ground water samples were collected during subsequent field work conducted in January 1989.

The following subsections describe the tasks completed for the Phase II environmental site investigation at the St. Johns Riverfront property.

4.1 GEOPHYSICAL SURVEY INVESTIGATION

Portions of the St. Johns Riverfront property were inspected using geophysical electromagnetic (EM) methods to determine if there were buried materials or products within the shallow subsurface. Maps showing the location of industrial facilities that had been situated on the site and historic air photos were used to identify those areas that had the most potential for buried tanks and product spills. The survey was conducted in and around these areas.

Areas surveyed included the site of the wood veneer manufacturing plant located in the northwest portion of the property, the site of the Port of Portland drydock facilities in the south central portion of the property, and the site of the coopeage facility

at the southeast end of the property. Figure 5 shows the survey locations.

An EM survey (Meso-tech Model 480 Metal Location device) was made on the southeastern half of the property for buried storage tanks and other anomalous areas. This instrument measures changes in the soil's magnetic susceptibility to a depth of from 5 to 6 feet.

A 1,700 foot traverse was made roughly down the center of the property to the approximate middle of the property. This traverse started 155 feet from the easterly rail of the railroad track spur bordering the property on the northwest, along the extension of North Richmond Avenue. The location of this traverse is shown on Figure 5 as Profile NR 1. Cross-sections were made at 100 foot intervals for the first 500 feet, but dense blackberry growth and sapling growth limited the lengths of the cross-section lines.

The structures above the ground surface in this area had been razed. However, structural foundations, concrete floors, machine foundations, existing buried water pipe lines, and existing buried drainage systems still remain. Some reinforced concrete foundation structures, which extend above the ground surface, are still in place. The water pipe lines, as far as could be determined, were disconnected from the off-property supply. The railroad spur tracks still exist, largely in the area that was the cooorage, and are mostly covered with soil. A petroleum product pipeline exists in the railroad spur right-of-way which forms the northeast property boundary.

4.2 TEST BORINGS

Test boring programs were initiated at the site on two separate occasions. The initial program, consisting of 13 boreholes, was

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completed in December 1988. Subsequent drilling, consisting of 6 boreholes, was conducted to further define subsurface conditions. This subsequent drilling program was completed in January 1989. These drilling programs are described in the following paragraphs.

4.2.1 Initial Boring Program

Thirteen test borings were completed in December 1988 using a drill rig equipped with a 3-3/4-inch O.D. hollow stem auger. The borings were located in areas thought to have the greatest potential for subsurface contamination. Boring locations are identified on Figure 6. These areas were selected after locating fuel storage areas, machine shops, underground piping, paint shops, glue shops and store rooms on historic building layout plans, and by interpreting the results of the geophysical investigation. Additionally, borings SE/E-1, 2 and 6 were located adjacent to the southeast property boundary in an effort to determine whether or not contamination from the McCormick and Baxter facility had impacted the soil or ground water quality at St. Johns Riverfront site.

During drilling, soil samples were collected at 5-foot intervals. Each soil sample was divided into two representative portions (split samples). One split sample was placed directly into a laboratory certified clean glass jar and stored on ice in a cooler. These samples were archived for future analysis should it have been deemed necessary. The second split sample portion was placed in a clean glass canning jar. Each jar was allowed to come to room temperature. The organic vapor concentration in the head space of the jar was then screened using a photoionization detector (PID). Head space readings were recorded and are summarized on Table 4. The soil sample from each boring showing the highest PID measurement was submitted for laboratory analysis (Table 4).

The selected soil samples were placed on ice in a cooler and shipped directly to the analytical laboratory. Sample transfer chain of custody documentation is included in Appendix G.

All borings were terminated slightly below the water table, which, in most cases, occurred at a depth of approximately 25 feet below land surface. Exceptions to this were borings SE/E-12 and SE/E-13 which were terminated at depths of 35 feet. Boring logs are presented in Appendix D. Upon encountering the water table, a pvc well screen and casing was inserted through the auger. The auger was pulled back to expose the screen and ground water samples were obtained using a Teflon double check valve bailer. Following collection of ground water samples, the pvc screen and casing, and the auger flights were removed. All borings were backfilled with bentonite and hydrated with water to form an effective seal.

All drilling equipment was decontaminated between boreholes using a hot water pressure washer. All sampling equipment was decontaminated between samples using a non-phosphatic detergent wash, a distilled water rinse, a methanol rinse, and a final distilled water rinse.

4.2.2 Hand Auger Borings

Four hand auger borings (see Figure 6) were extended to the water table using a steel hand auger. These boring locations were selected to evaluate whether or not contamination from McCormick and Baxter had impacted the soil or ground water quality at the St. Johns Riverfront property. One composite sample was prepared from each boring. The steel hand auger and sample preparation utensils were decontaminated between each hand auger boring using a non-phosphatic detergent wash, a distilled water rinse, a methanol rinse, and a final distilled water rinse.

4.2.3 Subsequent Drilling

Additional drilling was initiated at the site approximately one month (January 1989) after the initial drilling program. This drilling was conducted to further define soil and ground water quality in areas where the results of the initial sampling and analysis program were not conclusive. A total of 6 additional borings were completed. These borings are identified as SE/E 14 through SE/E 19 on Figure 6. Soil samples were collected from 4 of the borings and ground water samples were collected from 3 of the borings.

Drilling, sampling, and decontamination procedures used were similar to those used during the initial drilling. An exception was that a stainless steel drive point screen and black iron pipe casing were used for ground water sampling instead of pvc screen and casing.

5.0 INVESTIGATION RESULTS

5.1 GEOPHYSICAL INVESTIGATION RESULTS

The area around the drydock foundry and/or blacksmith shop has an unknown thickness of cinders in the near surface. A partially buried brick structure (sump) exists near the northeast corner of the remaining concrete foundation wall (see Figure 5).

Buried drainage pipes exist below, and apparently through, the railroad bridge embankment on the southeast property boundary. Other buried sumps with drainage connections to the river bank are scattered throughout the area.

No underground storage tanks were located in the areas investigated. It is suggested that some oil storage containers may have been located above the ground surface. This suggestion is based on the nature of some of the remaining foundation pads.

An anomaly, represented by an increase in soil conductivity on Profile NR 1, was found and is marked as "field stake" on Figure 5. This anomaly was staked in the field. A similar, high conductivity zone at Station 550 was also found. These anomalous zones may represent areas of finer grained soils.

Soil conductivities decrease toward the South/Southeast indicating a possible change from clayey or silty surface soils to well-drained sandy soils.

A considerable amount of surface garbage and other discards have been deposited in the area. The area also contains concrete and asphalt rubble.

Areas identified as possible contaminant sources during the geophysical survey (sumps, disturbed soil, anomalous conductivities, etc.) were selected as test boring sites.

5.2 SOIL QUALITY

5.2.1 Soil Sampling and Analysis

A total of 66 soil samples were collected at the site. Fifty-eight of the 66 samples were collected from the 13 test borings drilled during the initial soil boring program. Four of the soil samples were composite samples collected from the 4 hand-augered borings. The remaining 4 samples were collected during the subsequent drilling program.

Twenty-five discrete and composite soil samples were submitted for laboratory analysis. A summary of samples submitted for analysis is presented on Table 4. The analyses run on the various soil samples, and a summary of the analytical results, are given in Table 5. As shown in Table 5, soil analyses included PCBs, TOX, oil and grease, BTEX, and hydrocarbon scans. Analytical results are included in Appendix E.

5.2.2 Analytical Results

There were no PCBs detected in any of the 22 soil samples tested. This includes 8 soil samples from borings SE/E 12, SE/E 13, SE/E 14 and SE/E 19 that were specifically tested to determine if contaminated soil could have been the source of the minor concentrations of PCBs detected in unfiltered ground water from borings SE/E 12 and SE/E 13 (Section 5.3.2).

Low concentrations of TOX were detected in 7 of the 17 samples tested. All 7 of these samples contained TOX concentrations at or slightly above the detection limit of 1 mg/kg. These low TOX

concentrations do not indicate significant contamination of the soils sampled.

Relatively low concentrations of oil and grease were detected in 4 soil samples collected during the initial boring program. These concentrations ranged from 0.068 to 0.052 percent or 680 to 520 ppm (detection limit 200 ppm). Two of the samples were from hand auger borings HA-3 and HA-4, located along the bank of the Willamette River (see Figure 6). An oil stain had been noted on the bank near the high tide line during a reconnaissance inspection of the site. The staining appeared to be from a heavy oil slick on the river. Therefore, the oil and grease detected in the composite soil samples from these holes was likely to be from an oil source in the river. The other two oil and grease detections were from the 10-foot soil sample in test boring SE/E-2 and the 20-foot soil sample in test boring SE/E-8.

To further evaluate possible hydrocarbon concentrations in the soils adjacent to SE/E 2 and SE/E 8, additional samples were collected during the subsequent boring program. Soil from the 20-21.5 foot depth in SE/E 15 and from the 10-11.5 foot depth in SE/E 16 were collected and analyzed. These borings were located adjacent to SE/E 8 and SE/E 2, respectively, and the sample depths were the same as those in SE/E 8 and SE/E 2. Analyses included BTEX by EPA Method 8020 and a hydrocarbon scan. These analyses were selected to determine if any of the lighter end, more volatile petroleum products (gasoline, kerosene) might be present in the soils. Typically, these products are of more concern from an environmental protection and public health standpoint than are the lower end (diesel fuel, lubricating oil) petroleum products. The DEQ has general guideline clean up standards for soils of 100 ppm for gasoline and 1000 ppm for diesel.

No BTEX, gasoline, or diesel was detected in the soil samples from SE/E 15 or SE/E 16. This suggests that any petroleum products present in the samples collected from SE/E 2, 8, 15, and 16 are most likely lower end products in concentrations less than those generally considered to be a significant problem by the DEQ (using the diesel oil guideline).

5.3 GROUND WATER QUALITY

5.3.1 Ground Water Sampling

A total of 22 ground water samples were collected at the site. One sample was collected from each of the 13 test borings and one from hand auger HA-4 during the initial boring program, and 8 ground water samples were collected from the 6 boreholes constructed during the subsequent drilling program. Figure 6 shows the location of the boreholes. Table 3 shows the parameters tested for each sample, and Tables 6 and 7 present the water quality summaries. The laboratory results are included in Appendix F.

5.3.2 Ground Water Analysis and Analytical Results

Laboratory analysis detected minor concentrations of PCBs in two unfiltered water samples (SE/E 12 and SE/E 13). Concentrations were 2.5 and 1.6 ug/L, respectively. Soil samples from each of these borings and borings SE/E 14 and SE/E 19 (located adjacent to SE/E 12 and SE/E 13, respectively) were analyzed and no PCBs were detected (Section 5.2).

To further evaluate the significance of the PCB detection, additional water samples were collected during the subsequent drilling program. Both filtered and unfiltered ground water samples were collected from SE/E 14 and SE/E 19. PCB analyses were run on the filtered samples from SE/E 14 and SE/E 19, on the

unfiltered sample from SE/E 14, and on a concentrated sample of a petroleum sheen collected from the unfiltered water sample from SE/E 19. PCBs were not detected in any of these samples (Table 6 and Appendix F).

These results indicate that no PCB contamination is present in the ground water from borings SE/E 14 and SE/E 19. This information, combined with the fact that no PCBs were detected in any of the soils analyzed, suggests that no significant PCB contamination is present at the locations tested. The detection of minor concentrations of PCBs in the ground water from wells SE/E 12 and SE/E 13 may have been due to false readings, minor localized contamination, or the result of contamination introduced during well construction, sample collection, or sample analysis.

An oily sheen was observed on ground water samples from borings SE/E 9, 10, 12, 13, and 19. No product layer or concentration heavier than a sheen was noted in any of these boreholes. To characterize this oily sheen, a sample was collected from SE/E 19. This sample was analyzed for PCBs, and no PCBs were detected (Table 6 and Appendix F). The sample was also analyzed for petroleum hydrocarbons and did not test positive for gasoline, diesel, or kerosene. Further analysis by the laboratory (Methods 418.1/413.2/3510/and 8015 modified) indicated that the oily sheen is likely from a high molecular weight petroleum hydrocarbon (similar to 30 weight to motor oil). A source for this oil film was not identified. However, likely sources include leaks, spills, or improper disposal of new or used motor oil from past industrial activities on the site. It is also possible that the dredge spoils used for fill over much of the site may have contained minor amounts of petroleum products.

Twelve of the 14 ground water samples collected during the initial test boring program were tested for TOX. SE/E's

intention was to use the TOX data as a screening technique. Any samples that had TOX concentrations exceeding 100 ug/L would be retested for volatile and semi-volatile organics.

The remaining two water samples collected during the initial drilling program were from wells located along the property boundary with the McCormick and Baxter facility (SE/E 2 and SE/E 6). Because of their critical location, these two samples were subjected to the more detailed analysis for volatile and semi-volatile organics (EPA Methods 3510/8270 and 8240) rather than the TOX screening.

Low TOX concentrations (below 50 ug/L) were detected in all 12 of the samples tested. TOX concentrations below 50 ug/L (10 times the detection limit) are generally considered statistically insignificant because of potential sample interference and testing method uncertainty (personal communication, 1989, Dave Edleman, Columbia Analytical Services Laboratory). However, for purposes of a thorough investigation, an additional ground water sample was collected from boring SE/E 17 and analyzed for pesticides and volatile organics (likely sources of TOX). Boring SE/E 17 was constructed during the second or subsequent drilling program and was located adjacent to the initial drilling program boring (SE/E 4) that had the highest TOX concentration (44 ug/L). No pesticides or volatile organics were detected. In addition, no volatile or semi-volatile compounds were detected in the samples from borings SE/E 2 and SE/E 6.

All 14 samples collected during the initial boring program were analyzed for polynuclear aromatic hydrocarbons (PAHs) using EPA Methods 3510/8100, and chlorinated phenolic compounds (EPA Methods 3510/8150), with detection limits of 1 and 10 ug/L, respectively. All samples were below the detection limits.

Priority pollutant metals were also analyzed in all water samples collected during the initial drilling program. Table 7 presents the results for selected priority pollutant metals. There were no concentrations of concern, with the possible exception of samples SE/E-4 and SE/E-5. These were the only samples that were not filtered prior to testing, and both samples exceed the EPA Drinking Water Standards established for chromium and lead. In order to test the assumption that the exceedances were due to the fact that the samples had not been filtered, and that they were not indicative of ground water contamination, additional samples were collected and analyzed.

A boring (SE/E 17) was constructed adjacent to the site of SE/E 4, and two ground water samples were collected. One sample was field filtered and one sample was unfiltered. Analysis of these samples showed a significant increase in the number of metals detected in the unfiltered sample versus the filtered sample. Analytical data, which is summarized on Table 7, reveals that 7 metals were detected in the unfiltered sample while only a minor concentration of one metal was detected in the filtered sample. Based on these results, it is assumed that the samples from SE/E 4 and SE/E 5 would not have exceeded drinking water standards had they been filtered, and that no significant metals contamination is present at the sites tested. Similar variations in metals concentrations tested in filtered and unfiltered samples have been noted by SE/E at many northwest sites.

6.0 OTHER CONSIDERATIONS

6.1 SITE DEBRIS

As noted in the discussions of land use (Section 3.0) and the geophysical investigation (Section 4.2), structural foundations, concrete floors, machine foundations, cables, building rubble, piers, pilings, log skids, buried water pipe lines, buried drainage systems, railroad spurs, and other debris from past industrial activities remain at the site. These factors should be considered when estimating costs for preparing the site for further construction.

6.2 MCCORMICK AND BAXTER

An additional consideration is the McCormick and Baxter Creosote Company (McCormick and Baxter). As previously discussed, this facility has been in operation since the 1940s and significant contamination does exist below the plant site. The testing completed by SE/E for this investigation did not indicate the presence of contaminants typical of the McCormick and Baxter site (PAH, Penta, heavy metals) on the St. Johns Riverfront property. However, the following paragraphs have been included to provide information on the history and current status of the McCormick and Baxter site.

Based on technical reports, personal communication with regulatory officials, and the November 1987 stipulation and final order (consent order) regarding the McCormick and Baxter site, it appears that the level of contamination at the site will decrease with time.

An Environmental Contamination, Site Assessment, and Remedial Action Report prepared by CH₂M Hill and dated February 1987 notes the following improvements in waste management practices and

process improvements through December 1986 at McCormick and Baxter's Portland facility:

- o 1969--eliminated the direct discharge of process waste to the Willamette River by installation of the evaporator.
- o 1970--eliminated the discharge of boiler blowdown to the Willamette River by rerouting the blowdown to the evaporator.
- o 1972--discontinued the onsite disposal of process wood preservative residues.
- o 1981--constructed a secured facility for the short-term storage (less than 90 days) of containerized process wood preservative residues.
- o 1983--discontinued treating Washington Cellon-treated wood with caustic. The treated wood is now immersed in an oil bath inside the retort to remove penta crystals.
- o 1984--CH₂M Hill began surface, near-surface, and shallow (less than 100 feet depth) soil sample collection and analysis; installed ground water monitoring wells; collected and analyzed surface water runoff and ground water; and measured surface water runoff flow and elevation of water levels in the ground water monitoring wells.
- o 1984--CH₂M Hill and A.J. Zinda Company began inspecting and testing wood preservative storage and working tanks, along with associated pumps, valves, and underground piping.
- o 1984--M & B formalized and improved the plant's environmental improvement program that includes daily inspections, schedule maintenance of wood preservative process and storage equipment, weekly plant environmental meetings, inspection, cleanup, and repair of concrete sumps and containment structures.
- o In May 1985, CH₂M Hill and A.J. Zinda Company completed inspecting, testing, and repairing storage and work tanks, valves, pumps, and underground pipes that handle oil, creosote, and/or pentachlorophenol. This included condensate return lines and the removal or blind flagging of abandoned lines. The inspected tanks showed no signs of leaks, cracks, or holes. There were signs of minor leaks from some valves, pumps, and pipe fittings that required the replacement, repacking, or rebuilding of the valves and pumps, and tightening or replacement of pipe fittings.
- o In 1985, high-level sensors and an alarm system were installed on the work tanks in the tank farm. In addition,

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an enclosed secondary containment system consisting of hard piping and an above-ground tank was installed to contain and return to the process any potential overflow from work tanks in the tank farm. Since this system was installed, there have been no incidents of process overflow.

- o In 1985 and 1986, three underground tanks no longer in use were completely removed. These were a 10,000-gallon tank located outside the western corner of the tank farm that stored creosote in oil; a 4,000-gallon tank located between the evaporator and the Cellon plant that stored U-con oil (anti-blooming agent); and a 6,000-gallon PS300 fuel oil tank located between the rear of No. 2 retort and the evaporator. These tanks showed no signs of leaks, cracks, or holes. The 10,000-gallon tank is currently being used in the tank farm as the above-ground tank for the secondary containment system. The other two tanks are being saved for possible future use.
- o Since late 1984, Portland M & B initiated an aggressive inspection program of the plant's concrete and concrete block containment structures, sumps, floors, walls, etc., to look for signs of deterioration and cracks. Where required, cracks were repaired, and containment structures were repaired, modified, and/or enlarged. Also, additional concrete curbing was constructed. The inspection continues to be an ongoing program, with repairs and improvements being made as required.
- o In September 1986, M & B replaced ACA treating solution with ACZA treating solution. The ACZA contains 50 percent less arsenic than the ACA solution previously used. The ACZA is designed to reduce the amount of surface deposits left on the treated wood. This should provide a twofold improvement with respect to the potential for surface soil, surface water, and ground water contamination. There is a reduction in surface deposits on the wood, and any deposits present will contain significantly less arsenic than previously, when M & B was treating with ACA.

Conversations with Oregon Department of Environmental Quality officials have revealed:

- o McCormick and Baxter is adhering to their long range cleanup goals established under the DEQ's Stipulation and Final Order (consent order) dated November 1987.
- o McCormick and Baxter have installed ground water recovery wells and are developing a pilot recovery project.

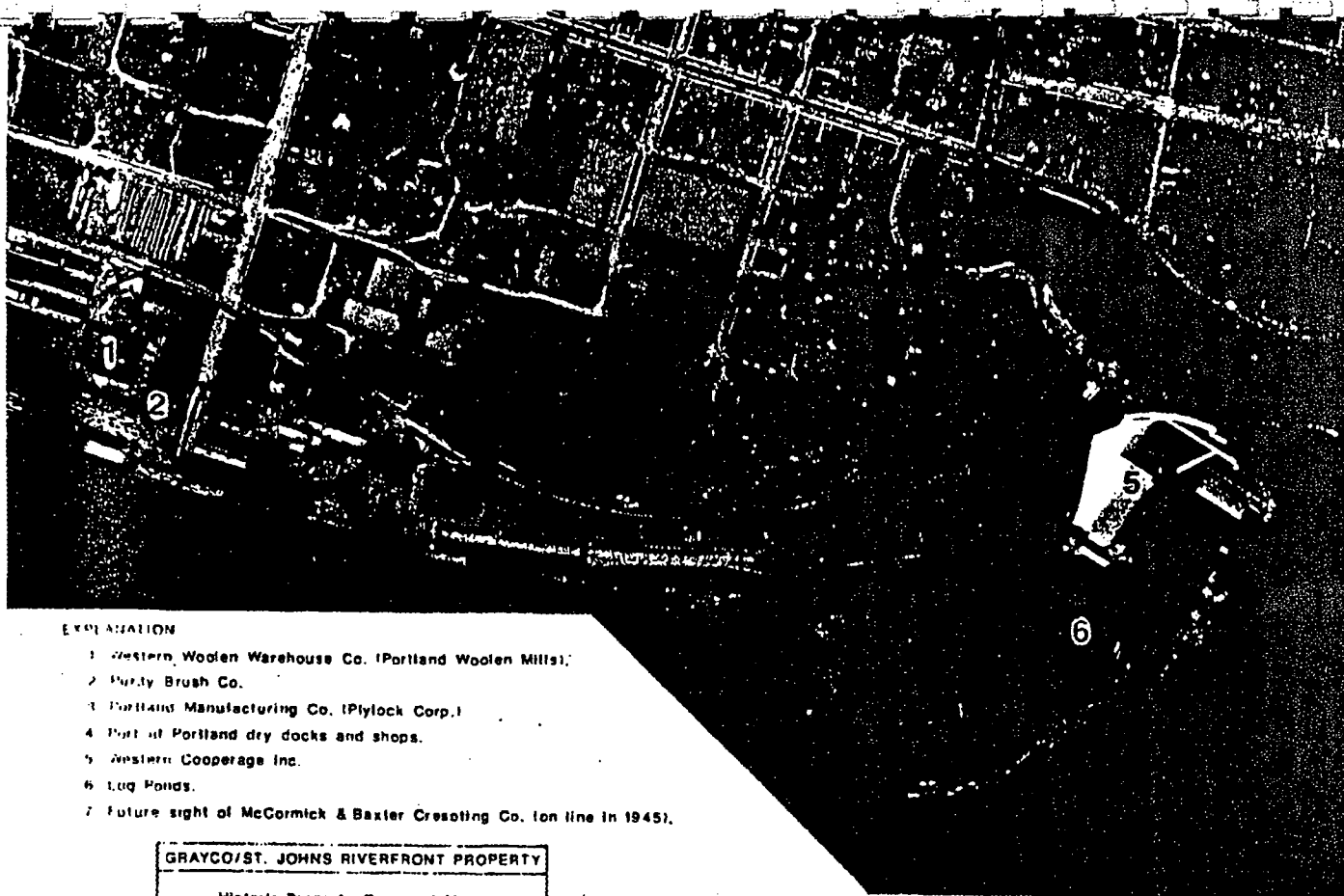
- o The completed recovery project should be on line within a year.
- o McCormick and Baxter have made significant improvements in their operations and in cleaning up soil contamination.
- o Ground water and soil contamination is not likely to become worse and should only get better.
- o Ground water beneath the site is reportedly flowing toward the Willamette River.

The consent order contains the following summarized stipulations that McCormick and Baxter must adhere to:

- o Shall install a ground water collection and treatment facility;
- o If requested by the DEQ, shall obtain and analyze ground water samples from wells located within 1 mile of the site;
- o Shall construct covered storage areas for freshly treated wood;
- o Shall construct dip tank containment pads in front of each retort;
- o Shall collect and treat storm water runoff;
- o Shall study biodegradation techniques for treatment of surface and near-surface contaminated soils.

7.0 REFERENCES

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- PETERS, DON, January 4, 1989, Oregon Department of Environmental Quality, personal communication.
- RENFROE, BILL, January 11, 1989, Oregon Department of Environmental Quality, personal communication.
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EXPLANATION

- 1 Western Wooden Warehouse Co. (Portland Woolen Mills).
- 2 Purdy Brush Co.
- 3 Portland Manufacturing Co. (Plylock Corp.)
- 4 Port of Portland dry docks and shops.
- 5 Western Cooperage Inc.
- 6 Log Ponds.
- 7 Future sight of McCormick & Baxler Crossting Co. (on line in 1945).



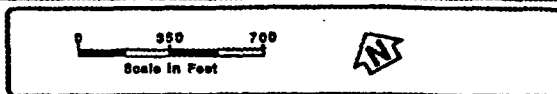
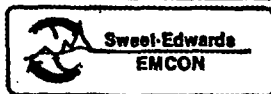
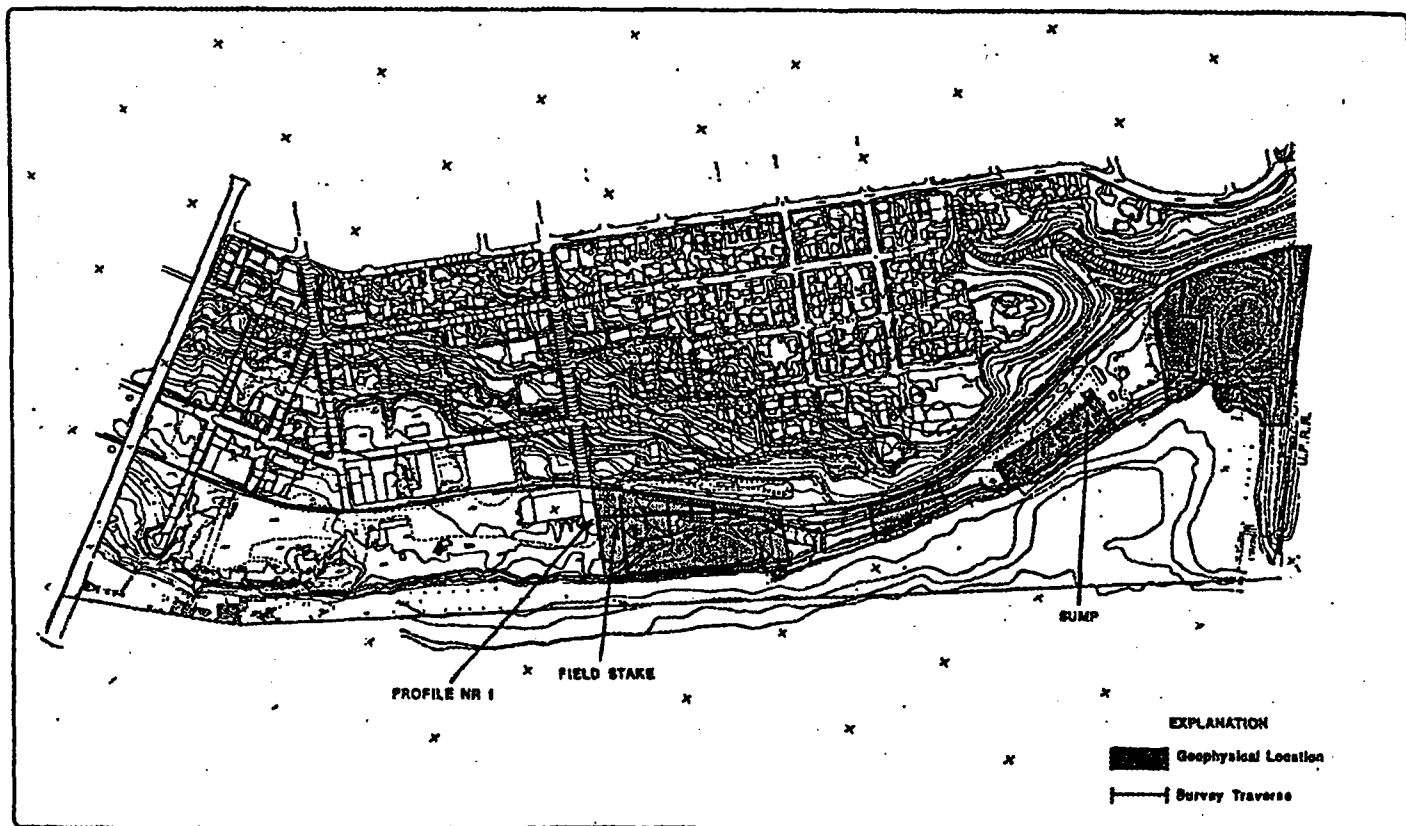
GRAYCO/ST. JOHNS RIVERFRONT PROPERTY	
Historic Property Occupant Map	
Sweet-Edwards / EMCON, Inc.	
DATE	12-28-89
PREPARED BY	mmm
REVIEWED BY	
Figure 4	

Photo taken circa 1940.

0 350 700
Approx. Scale in Feet



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GRAYCO/ST. JOHNS RIVERFRONT PROPERTY
Geophysical Survey Location Map
Figure 6

DATE 11-12-78
DWN. BY J. J. J. J.
APPD. 388
REV. 1
PROJECT NO. 7310-01

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Table 6 (continued)

NOTE:

Detection Limits 0.2

- * = Tested for volatile and semivolatile organic compounds, Methods 8240 and 8270. No compounds were detected.
 - ** = Filtered and unfiltered sample
 - *** = Filtered water and unfiltered water with concentrated oil sheen tested.
 - = Not tested.
 - 1 = Detection limit for oil contaminated sample from SE/E 19 was 1 ppm.
 - PCB = Polychlorinated Biphenyl (Total Arachlor)
 - TOX = Total Organic Halides
 - PAH = Polyaromatic Hydrocarbons
-

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TABLE 6
GRAYCO-ST. JOHNS RIVERFRONT PROPERTY
GROUND WATER QUALITY LABORATORY RESULTS
SELECT ORGANIC CONSTITUENTS (ug/L)

SAMPLE I.D.	PCB	TOX	PAH	PENTA- CHLORO- PHENOL	PESTICIDES METHOD 608	VOLATILE ORGANICS METHOD 601
SE/E-1	ND	39	ND	ND	-	-
SE/E-2	ND	*	ND	ND	-	-
SE/E-3	ND	34	ND	ND	-	-
SE/E-4	ND	44	ND	ND	-	-
SE/E-5	ND	21	ND	ND	-	-
SE/E-6	ND	*	ND	ND	-	-
SE/E-7	ND	26	ND	ND	-	-
SE/E-8	ND	13	ND	ND	-	-
SE/E-9	ND	28	ND	ND	-	-
SE/E-10	ND	14	ND	ND	-	-
SE/E-11	ND	12	ND	ND	-	-
SE/E-12	2.5	7	ND	ND	-	-
SE/E-13	1.6	17	ND	ND	-	-
SE/E-14	ND**	-	-	-	-	-
SE/E-17	-	-	-	-	ND	ND
SE/E-19	ND***	-	-	-	-	-
HA-4	ND	45	ND	ND	-	-
Detection Limits	1 ¹	5	1	10	Variable	Variable

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Table 5 (Continued)

NOTE:

PCB = Polychlorinated Biphenyl

TOX = Total Organic Halides

BTEX = Benzene, Toluene, Ethylbenzene, Xylene

Hydrocarbon Scan - Diesel, Gasoline

* = Composite Soil Samples

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TABLE 5
GRAYCO-ST. JOHNS RIVERFRONT PROPERTY
SOIL QUALITY LABORATORY RESULTS

SAMPLE I.D.	PCB (mg/kg)	TOX (mg/kg)	OIL AND GREASE (%)	BTEX METHOD 820 (mg/kg)	HYDROCARBON SCAN (mg/kg)
SE/E-1-10	ND	1	<0.02		
SE/E-2-10	ND	2	0.068		
SE/E-3-10	ND	ND	<0.02		
SE/E-4-20	ND	ND	<0.02		
SE/E-5-10	ND	ND	<0.02		
SE/E-6-20	ND	ND	<0.02		
SE/E-7-10	ND	1	<0.02		
SE/E-8-20	ND	1	0.054		
SE/E-9-15	ND	ND	<0.02		
SE/E-10-25	ND	ND	<0.02		
SE/E-11-15	ND	ND	<0.02		
SE/E-12-A*	ND				
SE/E-12-15	ND	ND	<0.02		
SE/E-12-B*	ND				
SE/E-13-A*	ND				
SE/E-13-10	ND	1	<0.02		
SE/E-13-B*	ND				
SE/E-14	ND				
SE/E-15-20				ND	ND
SE/E-16-10				ND	ND
SE/E-17	No soil samples taken.				
SE/E-18	No soil samples taken.				
SE/E-19-30	ND			ND	ND
HA-1*	ND	1	<0.02		
HA-2*	ND	2	0.052		
HA-3*	ND	ND	0.056		
HA-4*	ND	ND	<0.02		
Detection Limits	1.0	1.0	0.02	.05	5

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TABLE 4, continued

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BORING I.D.	SAMPLE I.D.	SAMPLE INTERVAL ft.	DATE COLLECTED	DATE SCREENED	PID*	SAMPLE SUBMITTED FOR TESTING	COMPOSITE SAMPLE IDENTIFICATION
SE/E-13	SE/E-13-5	5-6.5	12/9/88	12/10/88	49	**	SE/E-13-A
	SE/E-13-10	10-11.5	12/9/88	12/10/88	48	**	
	SE/E-13-15	15-16.5	12/9/88	12/10/88	51	X	
	SE/E-13-20	20-21.5	12/9/88	12/10/88	18	**	SE/E-13-B
	SE/E-13-25	25-26.5	12/9/88	12/10/88	35	**	
SE/E-14	SE/E-14	30.5-32	1/26/89	NA	NA	X	NA
SE/E-15	SE/E-15-20	20-21.5	1/26/89	NA	NA	X	NA
SE/E-16	SE/E-16-10	10-11.5	1/26/89	NA	NA	X	NA
SE/E-19	SE/E-19-30	30-31.5	1/27/89	NA	NA	X	NA

NOTE:

*PID = Photoionization detector
 NA = Not applicable

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TABLE 4, continued

Page 2 of 3

BORING I.D.	SAMPLE I.D.	SAMPLE INTERVAL ft.	DATE COLLECTED	DATE SCREENED	PID*	SAMPLE SUBMITTED FOR TESTING	COMPOSITE SAMPLE IDENTIFICATION
SE/E-7	SE/E-7-5	5-6.5	12/7/88	12/9/88	1.1		
	SE/E-7-10	10-11.5	12/7/88	12/9/88	4.2	X	
	SE/E-7-15	15-16.5	12/7/88	12/9/88	1.7		
	SE/E-7-20	20-21.5	12/7/88	12/9/88	1.4		
SE/E-8	SE/E-8-5	5-6.5	12/7/88	12/9/88	0.5		
	SE/E-8-10	10-11.5	12/7/88	12/9/88	0.6		
	SE/E-8-15	15-16.5	12/7/88	12/9/88	0.3		
	SE/E-8-20	20-21.5	12/7/88	12/9/88	0.5	X	
SE/E-9	SE/E-9-5	5-6.5	12/8/88	12/9/88	0.5		
	SE/E-9-10	10-11.5	12/8/88	12/9/88	1.0		
	SE/E-9-15	15-16.5	12/8/88	12/9/88	1.5	X	
	SE/E-9-20	20-21.5	12/8/88	12/9/88	1.3		
	SE/E-9-25	25-26.5	12/8/88	12/9/88	1.2		
SE/E-10	SE/E-10-5	5-6.5	12/8/88	12/9/88	0.5		
	SE/E-10-10	10-11.5	12/8/88	12/9/88	0.2		
	SE/E-10-15	15-16.5	12/8/88	12/9/88	0.3		
	SE/E-10-20	20-21.5	12/8/88	12/9/88	0.6		
	SE/E-10-25	25-26.5	12/8/88	12/9/88	1.1	X	
SE/E-11	SE/E-11-5	5-6.5	12/8/88	12/9/88	0.7		
	SE/E-11-10	10-11.5	12/8/88	12/9/88	0.4		
	SE/E-11-15	15-16.5	12/8/88	12/9/88	1.1	X	
	SE/E-11-20	20-21.5	12/8/88	12/9/88	0.2		
	SE/E-11-25	25-26.5	12/8/88	12/9/88	0.5		
SE/E-12	SE/E-12-5	5-6.5	12/9/88	12/10/88	47.0	**	
	SE/E-12-10	10-11.5	12/9/88	12/10/88	>1000	X	SE/E-12-A
	SE/E-12-15	15-16.5	12/9/88	12/10/88	>1000	**	
	SE/E-12-20	20-21.5	12/9/88	12/10/88	100	**	
	SE/E-12-25	25-26.5	12/9/88	12/10/88	120	**	SE/E-12-B
	SE/E-12-30	30-31.5	12/9/88	12/10/88	64	**	

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TABLE 4
GRAYCO - ST. JOHNS RIVERFRONT PROPERTY
SOIL SCREENING RESULTS

Page 1 of 3

BORING I.D.	SAMPLE I.D.	SAMPLE INTERVAL ft.	DATE COLLECTED	DATE SCREENED	PID*	SAMPLE SUBMITTED FOR TESTING	COMPOSITE SAMPLE IDENTIFICATION
SE/E-1	SE/E-1-5	5-6.5	12/5/88	12/7/88	3.3		
	SE/E-1-10	10-11.5	12/5/88	12/7/88	3.1	X	
	SE/E-1-15	15-16.5	12/5/88	12/7/88	3.0		
	SE/E-1-20	20-21.5	12/5/88	12/7/88	2.2		
SE/E-2	SE/E-2-5	5-6.5	12/5/88	12/7/88	2.6		
	SE/E-2-10	10-11.5	12/5/88	12/7/88	5.6	X	
	SE/E-2-15	15-16.5	12/5/88	12/7/88	1.5		
	SE/E-2-20	20-21.5	12/5/88	12/7/88	0.5		
SE/E-3	SE/E-3-5	5-6.5	12/6/88	12/7/88	0.4		
	SE/E-3-10	10-11.5	12/6/88	12/7/88	2.1	X	
	SE/E-3-15	15-16.5	12/6/88	12/7/88	0.3		
	SE/E-3-20	20-21.5	12/6/88	12/7/88	0		
SE/E-4	SE/E-4-5	5-6.5	12/6/88	12/7/88	15.0		
	SE/E-4-10	10-11.5	12/6/88	12/7/88	8.4		
	SE/E-4-15	15-16.5	12/6/88	12/7/88	12.2		
	SE/E-4-20	20-21.5	12/6/88	12/7/88	26.0	X	
SE/E-5	SE/E-5-5	5-6.5	12/6/88	12/7/88	1.1		
	SE/E-5-10	10-11.5	12/6/88	12/7/88	41.0	X	
	SE/E-5-15	15-16.5	12/6/88	12/7/88	12.4		
	SE/E-5-20	20-21.5	12/6/88	12/7/88	18.4		
SE/E-6	SE/E-6-5	5-6.5	12/7/88	12/9/88	4.6		
	SE/E-6-10	10-11.5	12/7/88	12/9/88	2.4		
	SE/E-6-15	15-16.5	12/7/88	12/9/88	7.0		
	SE/E-6-20	20-21.5	12/7/88	12/9/88	17.8	X	

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TABLE 3
GRAYCO/ST. JOHNS RIVERFRONT PROPERTY
GROUND WATER SAMPLE TESTING PARAMETERS

SAMPLE I.D.	SAMPLE COLLECTION DATE	PRIORITY POLLUTANT METALS*	TOX	PCB	PAH	PENTA- CHLORO- PHENOL	VOLATILE ORGANICS METHOD 601	PESTICIDES METHOD 608	VOLATILE ORGANICS METHOD 624	BASE NEUTRAL EXTRACTABLES METHOD 625	HYDROCARBON SCAN METHODS 3510/8015 MODIFIED
SE/E-1	12/5/88	X	X	X	X	X					
SE/E-2	12/5/88	X		X	X	X			X	X	
SE/E-3	12/6/88	X	X	X	X	X					
SE/E-4	12/6/88	X	X	X	X	X					
SE/E-5	12/6/88	X	X	X	X	X					
SE/E-6	12/7/88	X		X	X	X			X	X	
SE/E-7	12/7/88	X	X	X	X	X					
SE/E-8	12/7/88	X	X	X	X	X					
SE/E-9	12/8/88	X	X	X	X	X					
SE/E-10	12/8/88	X	X	X	X	X					
SE/E-11	12/8/88	X	X	X	X	X					
SE/E-12	12/9/88	X	X	X	X	X					
SE/E-13	12/9/88	X	X	X	X	X					
SE/E-14	1/26/89			X**							
SE/E-17	1/26/89	X**					X	X			
SE/E-19	1/27/89			X ¹							X ²
HA-4W	12/12/88	X	X	X	X	X					

NOTE:

TOX = Total Organic Halides

PCB = Polychlorinated Biphenols

PAH = Polyaromatic Hydrocarbons

* = Samples SE/E-1 through SE/E-5 were not field filtered.

** = Filtered and unfiltered samples collected.

1 = Filtered water sample and unfiltered water with concentrated oil sheen.

2 = Test conducted on oil from SE/E 19 unfiltered water sample.

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TABLE 2
ST. JOHNS RIVERFRONT PROPERTY
HISTORIC PROPERTY OCCUPANTS

OCCUPANT	APPROX. DATES OF OPERATIONS	ACTIVITY	GENERAL LOCATION	LOCATION ON HISTORIC PROPERTY OCCUPANT MAP (FIGURE 4)
The Plylock Corp. (formerly Portland Mfg. Co.)	<1936 through early 60's	Plywood mill	West end of site	#3
Port of Portland Drydocks	<1936 through late 50's	Ship building repair	Central and eastern portion of the site	#4
Scrimsmer Co. (occupied a portion of the drydock property after dry- dock operation suspended)	Mid 50's through 60's	Lumber mill	Eastern portion of the site	#4 and 5
Western Assoc. (formerly Western Cooperage)	<1936 through 1960's	Wood barrel manufacturing	East end of the site	#5
McCormick and Baxter Creosote Co.	1950's through present	Wood treating company	Adjacent to the east end of the site	#7

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TABLE 1
ST. JOHNS RIVERFRONT PROPERTY
HISTORIC AERIAL PHOTOGRAPHS

UNITED STATES ARMY CORPS OF ENGINEERS

<u>PHOTO YEAR</u>	<u>PHOTO IDENTIFICATION</u>
1936	5863, 5864
1939	4675
1940	5888, 5889
1948	589, 590
1948	41
1957	3302, 3303, 3304
1961	1173
1963	2810
1967	955
1970	1050
1971	3293, 3294, 3295
1972	132
1974	261
1977	485
1977	2481
1980	285
1983	285

NORTHERN LIGHTS STUDIO

Circa	1940
	1956
	1961
	1964
	1968
	1971
	1973
	1974
	1977
	1980
	1984
	1986
	1988

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APPENDIX B

OREGON WATER WELL LOGS

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T8701.01

Rev. 1 3/15/89

All that portion of the following described parcel lying southeasterly of the southeast right-of-way line of N. Richmond Avenue and its southwesterly extension.

A tract of land in Section 12, Township 1 North, Range 1 West of the Willamette Meridian and in Section 7, Township 1 North, Range 1 East of the Willamette Meridian, in the City of Portland, County of Multnomah and State of Oregon, described as follows:

Beginning at the intersection of the Northerly harbor line of Willamette River and the center line of N. Pittsburg Avenue; thence Northeasterly along said center line to its intersection with the Southerly line of vacated N. Albany Street; thence Southeasterly along the Southerly line of vacated N. Albany Street to the Southerly line of N. Pittsburg Avenue; thence Northeasterly along the Southerly line of N. Pittsburg Avenue to the Southerly line of N. Bradford Street; thence Southeasterly along the Southerly line of N. Bradford Street to its intersection with the Southerly extension of the center line of vacated N. John Avenue; thence Northerly along the center line of vacated N. John Avenue to the Southerly line of N. Crawford Street; thence Easterly along the Southerly line of N. Crawford Street to the Westerly line of N. Richmond Avenue; thence Southerly along the Westerly line of N. Richmond Avenue to the Southerly line of N. Bradford Street, if extended; thence Easterly along the Southerly line of N. Bradford Street, and extensions thereof to the center line of N. Tyler Avenue; thence Southerly along the center line of N. Tyler Avenue and its extension thereof to the Southerly line of Oregon-Washington Railroad and Navigation Company right of way; thence Easterly along the Southerly line of Oregon-Washington Railroad and Navigation Company right of way 1702 feet, more or less, to the East line of a tract of land conveyed to the Port of Portland, by deed recorded September 18, 1903 in Book 310, page 251, Deed Records; thence North $19^{\circ} 25' 30''$ East 273 feet, more or less, to the most Westerly corner of the Katrenos tract described in deed recorded March 15, 1963 in Deed Book 2158, page 447; thence South $70^{\circ} 34' 30''$ East 73.99 feet; thence North $36^{\circ} 07'$ East 50 feet; thence South $53^{\circ} 53'$ East 64.75 feet; thence North $49^{\circ} 07'$ East 82.31 feet to the Southerly line of Willamette Blvd.; thence Easterly along the Southerly line of Willamette Blvd. to the Westerly line of Spokane, Portland and Seattle Railroad Company right of way; thence Southerly along the Westerly line of Spokane, Portland Seattle Railroad Company right of way to the Northerly harbor line of Willamette River; thence Westerly along the Northerly harbor line of Willamette River to the point of beginning.

Table 3-1
WELL LOG SUMMARY
McCormick & Baxter, Portland, Oregon

Number	Well Owner	Location ²	Depth	Aquifer	Use
1	University of Portland	1N/1E-18	274	Tt	I
2a	Fibreboard Paper Products	1N/1E-18	425	TCr	I
2b	Fibreboard Paper Products	1N/1E-18	240	NR	I
3a	Northwest Natural Gas	1N/1E-19	100	TCr ¹	O
3b	Northwest Natural Gas	1N/1E-19	100	TCr ¹	O
3c	Northwest Natural Gas	1N/1E-19	100	TCr ¹	O
4	Clarendon School District	1N/1E-7	394	Tt ¹	C
5	Fred Meyer, Inc.	1N/1E-7	248	Tt	U
6a	McCormick & Baxter	1N/1E-7	130	Qal/Tt	I
6b	McCormick & Baxter	1N/1E-7	95	Qal	I
6c	McCormick & Baxter	1N/1E-7	219	Tt ¹	A
7a	Liquid Air, Inc.	1N/1W-13	102	TCr	A
7b	Liquid Air, Inc.	1N/1W-13	302	TCr	I
8a	Pennwalt	1N/1W-13	420	TCr	I
8b	Pennwalt	1N/1W-13	760	TCr	I
8c	Pennwalt	1N/1W-13	15	Qal	W
8d	Pennwalt	1N/1W-13	15	Qal	W
9	Winn	1N/1E-8	175	Tt(?)	D

1. Because these boreholes are not completed as wells, the aquifer symbol denotes the geologic stratum in which the borings were terminated.
2. Well locations include (in order) township, range, and section number.
3. Well logs are provided in the appendix.

A = Abandoned

C = Cathodic Protection

D = Domestic

I = Industrial/Irrigation

NR = Not Recorded

O = Other

U = Unused

W = Dewatering

NOTICE TO WATER WELL CONTRACTOR

The original and first copy of this report are to be filed with the

STATE ENGINEER, SALEM, OREGON, within 30 days from the date of well completion.

RECEIVED
OCT 18 1965

WATER WELL REPORT

STATE ENGINEER, STATE OF OREGON

SALMON, OREGON

State Well No. 1N/1E-18

State Permit No. _____

(1) OWNER:

Name University of Portland

Address 5000 N. Willamette Blvd.
Portland, Ore.

(2) LOCATION OF WELL:

County Multnomah Driller's well number _____

T. Section T. E. W.M.

Bearing and distance from section or subdivision corner

5000 N. Willamette Blvd.
Portland, Ore.

(3) TYPE OF WORK (check):

Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in item 12.

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☐ Municipal ☐ Rotary ☐ Driven ☐
Irrigation ☒ Test Well ☐ Other ☐ Cable ☒ Jetted ☐
Dug ☐ Bored ☐

(5) TYPE OF WELL:

(6) CASING INSTALLED:

Threaded ☐ Welded ☒
12 - Diam. from 13 ft. to 24.5 ft. Gage .250
- Diam. from _____ ft. to _____ ft. Gage _____
- Diam. from _____ ft. to _____ ft. Gage _____

(7) PERFORATIONS:

Perforated ☒ Yes ☐ No

Type of perforator used Mills knife

Size of perforations: 5 in. by 24 in.
13c perforations from 19.1 ft. to 23.5 ft.
perforations from _____ ft. to _____ ft.
perforations from _____ ft. to _____ ft.
perforations from _____ ft. to _____ ft.
perforations from _____ ft. to _____ ft.

(8) SCREENS:

Well screen installed? ☐ Yes ☒ No

Manufacturer's Name _____ Model No. _____

Line _____ Slot size _____ Set from _____ ft. to _____ ft.
Diam. _____ Slot size _____ Set from _____ ft. to _____ ft.

(9) CONSTRUCTION:

Well seal—Material used in seal Bentonite
L. pit of seal 10 ft. Was a packer used? ☒ No
Diameter of well bore to bottom of seal 16 in.
Were any loose strata cemented off? ☐ Yes ☒ No Depth _____
Was a down shoe used? ☒ Yes ☐ No
Was well gravel packed? ☐ Yes ☒ No Size of gravel: _____
Gravel placed from _____ ft. to _____ ft.
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(10) WATER LEVELS:

Static level 160 ft. below land surface Date 9-30-65
Artesian pressure _____ lbs. per square inch Date _____

(11) WELL TESTS:

Drawdown in amount water level is lowered below static level

Was a pump test made? ☒ Yes ☐ No If yes, by whom?

Yield: 875 gal./min. with 20 ft. drawdown after 8 hrs

Boiler test gal./min. with _____ ft. drawdown after _____ hrs

Artesian flow g.p.m. Date _____

Temperature of water 55° Was a chemical analysis made? ☐ Yes ☒ No

(12) WELL LOG:

Diameter of well below casing 12"

Depth drilled 24.7 ft. Depth of completed well 24.7 ft.

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Basement	0	13
Cemented gravel	13	48
Brown sand	48	136
Gravel	136	182
Coarse sand	182	187
Sand & gravel (water bearing)	187	236
Cemented gravel	236	247

Work started 9-10 19 65 Completed 9-30 19 65
Date well drilling machine moved off of well 10-5 19 65

(13) PUMP:

Manufacturer's Name _____
Type: _____ M.P.

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME A.M. JANSSEN DRILLING CO.

Address 21075 S.W. Tualatin Hwy
Clatskanie, Ore.

Drilling Machine Operator's License No. 236 & 274

(Signed) Edward M. Janssen
(Water Well Contractor)

Contractor's License No. 79 Date 10-8, 1965

STATE ENGINEER
Salem, Oregon

Well Record

STATE WELL NO. 2a 1N/1-18M
COUNTY Multnomah
APPLICATION NO. GR-393

OWNER: Pikaboard Paper Products Co. MAILING ADDRESS: _____

LOCATION OF WELL: Owner's No. 1 CITY AND STATE: Portland, Oregon

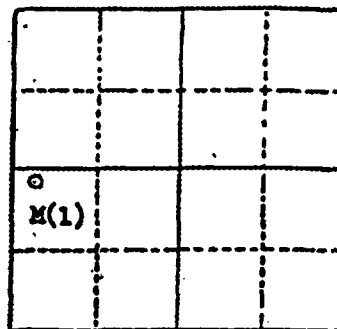
NW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 18 T. 1 N. E S. R. 1 W. W.M.

Bearing and distance from section or subdivision
corner S. 10° 00' E. 495' from NW cor. Sec. 18

Altitude at well 32'

TYPE OF WELL: Drilled Date Constructed ?

Depth drilled 425 Depth cased 90



Section 18

CASING RECORD:

8 inch

FINISH:

AQUIFERS:

WATER LEVEL:

?

PUMPING EQUIPMENT: Type Pump H.P. 10
Capacity _____ G.P.M.

WELL TESTS:

Drawdown _____ ft. after _____ hours _____ G.P.M.

Drawdown _____ ft. after _____ hours _____ G.P.M.

USE OF WATER Cooling and paper making Temp. _____ °F. 19

SOURCE OF INFORMATION GR-393

DRILLER or DIGGER ?

ADDITIONAL DATA:

Log X Water Level Measurements _____ Chemical Analysis _____ Aquifer Test _____

REMARKS:

State Well No. 1N/1-164(1)
County Multnomah
Application No. GB-393

Owner: Fibreboard Paper Products Corp. Owner's No. #1

Driller: _____ Date Drilled _____

CRAW00017731

STATE ENGINEER
Salem, Oregon

Well Record

26
STATE WELL NO. 1B/1-18M(2)
COUNTY Multnomah
APPLICATION NO. GR-393

OWNER: Fibrahord Paper Products Corp. MAILING ADDRESS: 6350 N. W. Front Street

LOCATION OF WELL: Owner's No. 2 CITY AND STATE: Portland, Oregon

N. 1/4 S. 1/4 Sec. 18 T. 1 N. R. 1 E. W.M.

Bearing and distance from section or subdivision
corner S. 27° 30' E. 565' from NW cor. Sec. 18

Altitude at well ?

TYPE OF WELL: drilled Date Constructed 1945

Depth drilled 240 Depth cased ?

Section 18

CASING RECORD:

?

FINISH:

AQUIFERS:

WATER LEVEL:

PUMPING EQUIPMENT: Type Pacific H.P. 15
Capacity ? G.P.M.

WELL TESTS:

Drawdown _____ ft. after _____ hours _____ G.P.M.
Drawdown _____ ft. after _____ hours _____ G.P.M.

USE OF WATER Cooling and paper making Temp. _____ °F. 19

SOURCE OF INFORMATION GR-393

DRILLER or DIGGER Tualatin Valley Drilling Company, Aloha, Oregon

ADDITIONAL DATA:

Log ☒ Water Level Measurements _____ Chemical Analysis _____ Aquifer Test _____

REMARKS:

WATER WELL REPORT
STATE OF OREGON

RECEIVED

OCT 26 1982

WATER RESOURCES DEPT.

State Well No. IN/E-19 a

State Permit No. _____

(1) OWNER:

Name Northwest Natural Gas Co.
Address 123 E. Flanders St.
City Portland State Ore. Zip 97209

(2) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Rehabilitation ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12

(3) TYPE OF WELL:

Gravity Air ☐ Drives ☐ Drums ☐ Industrial ☐ Municipal ☐
Gravity Mud ☒ Dig ☐ Irrigation ☐ Test Well ☐ Other ☒
Cable ☐ Bored ☐ Thermal ☐ Withdrawal ☐ Recirculation ☐

(4) PROPOSED USE (check):

(5) CASING INSTALLED: Steel ☒ Plastic ☐

Threaded ☐ Welded ☐

19" Diam. from 0 ft. to 20 ft. Gauge

" Diam. from ft. to ft. Gauge

LINER INSTALLED:

" Diam. from ft. to ft. Gauge

(6) PERFORATIONS:

Perforated? ☐ Yes ☐ No

Type of perforator used

Size of perforations in by in.

perforations from ft. to ft.

perforations from ft. to ft.

perforations from ft. to ft.

(7) SCREENS:

Well screen installed? ☐ Yes ☐ No

Manufacturer's Name

Type Model No.

Diam. Slot Size Set from ft. to ft.

Diam. Slot Size Set from ft. to ft.

(8) WELL TESTS:

Drawdown amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom?

gal./min. with ft. drawdown after hrs.

Air loss gal./min. with drill stem at ft. hrs.

Bailer test gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m.

Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Special standards: Yes ☐ No ☐

Well seal—Material used Cement

Well sealed from land surface to 20 ft.

Diameter of well bore to bottom of seal 14 in.

Diameter of well bore below seal 8 3/4 in.

Number of sacks of cement used in well seal 4 sacks

How was cement grout placed? PUMPED

Was pump installed? Type HP Depth ft.

Was a drive shoe used? ☐ Yes ☐ No Flaps Size location ft.

Did any strata contain unusable water? ☐ Yes ☐ No

Type of Water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes ☐ No Size of gravel

Gravel placed from ft. to ft.

NOTICE TO WATER WELL CONTRACTOR

The original and first copy of this report are to be filed with the

(10) LOCATION OF WELL:

County Multnomah Encoder's well number

Section 19 T 1N R 12 W M

Tax Lot # Lot Blk Subdivision

Address at well location: 1111 Front Ave. B Kirtledge Ave.

Plot 25 - 24

(11) WATER LEVEL: Completed well

Depth at which water was first found ft.

Static level ft. below land surface Date

Artesian pressure lbs. per square inch Date

(12) WELL LOG:

Diameter of well below casing

Depth drilled 100 ft. Depth of completed well ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata

MATERIAL	From	To	SWL
Sand	0	12	
Blue mucky sand	12	16	
Wet sand	16	23	
Blue mucky clay	23	30	
Brown mucky clay	30	50	
Brown shaly rock	50	55	
Gravel large	55	60	
Broken rock	60	68	
Broken brown & red rock			
little clay	68	95	
Grey basalt	95	100	

Work started Oct. 19 1982 Completed Oct. 20 1982

Date well drilling machine moved off of well October 20 1982

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

(Signed) _____ Date _____ 19__

Drilling Machine Operator's License No. 841

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name Hansen Drilling Co., Inc. (Type or print)

Address 6711 NE 58th Ave. Vancouver, Washington 986

(Signed) Jim Hansen (Type and print)

Contractor's License No. 504 Date October 25, 1982

WATER RESOURCES DEPARTMENT,
SALEM, OREGON 97310
within 30 days from the date of well completion

EP 12550-050

CRAW00017733

WATER WELL REPORT
STATE OF OREGON

RECEIVED
OCT 26 1982

WATER RESOURCES DEPT.
SALEM, OREGON

State Well No. 1N/1E-19a

State Permit No. _____

(1) OWNER:

Name Northwest Natural Gas Co.
Address 123 NE Flanders St.
City Portland State Ore. ZIP 97209

(2) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Sanitary Air ☐ Driven ☐ Domestic ☐ Industrial ☐ Municipal ☐
Sanitary Mud ☒ Dig ☐ Irrigation ☐ Test Well ☐ Other ☒
☐ Bored ☐ Thermal ☐ Withdrawal ☐ Reoperation ☐

(4) PROPOSED USE (check):

(5) CASING INSTALLED: Steel ☒ Plastic ☐
Threaded ☐ Welded ☐

10" Diam. from 0 ft. to 20 ft. Gauge
" Diam. from ft. to ft. Gauge

LINER INSTALLED:

" Diam. from ft. to ft. Gauge

(6) PERFORATIONS:

Perforated? ☐ Yes ☒ No

Type of perforator used _____

Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:

Well screens installed? ☐ Yes ☒ No

Manufacturer's Name _____

Type _____ Model No. _____
Diam. _____ Slot Size _____ Set from ft. to ft.
Diam. _____ Slot Size _____ Set from ft. to ft.

(8) WELL TESTS:

Drawdown amount water level is lowered below static level

Was a pump test made? ☐ Yes ☒ No If yes, by whom?
ft. gal/min. with ft. drawdown after hrs.

Air test gal/min. with drill stem at ft. hrs.

Barrel test gal/min. with ft. drawdown after hrs.

Artesian flow R.P.M.

Temperature of water _____ Depth artesian flow encountered _____ ft.

(9) CONSTRUCTION:

Special standards: Yes ☐ No ☒

Well seal—Material used Cement

Well sealed from land surface to 20 ft.

Diameter of well bore to bottom of seal 14 in.

Diameter of well bore below seal 8 3/4 in.

Number of sacks of cement used in well seal 4 sacks

How was cement grout placed? Pumped

Was pump installed? _____ Type _____ HP _____ Depth _____ ft.

Was a drive shoe used? ☐ Yes ☒ No Plug _____ Size _____ location _____ ft.

Did any strata contain unusable water? ☐ Yes ☒ No

Type of Water? _____ depth of strata _____

Method of sealing strata off _____

Was well gravel packed? ☐ Yes ☒ No Size of gravel _____

Gravel placed from _____ ft. to _____ ft.

NOTICE TO WATER WELL CONTRACTOR

The original and true copy of this report are to be filed with the

(10) LOCATION OF WELL:

County Multnomah Driller's well number _____
NE Section 19 T. 1 N. R. 1 E W. 1
Tax lot _____ Lot _____ Blk _____ Subdivision _____
Address of well location 174, Front Ave. ? Kittredge Ave.
Plat 25 - 24

(11) WATER LEVEL: Completed well

Depth at which water was first found _____ ft.

Static level _____ ft. below land surface. Date _____

Artesian pressure _____ lbs. per square inch. Date _____

(12) WELL LOG:

Diameter of well below casing _____ ft.

Depth drilled 100 ft. Depth of completed well 0 ft.

Formation: Describe color, texture, grain size and structure of materials, and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Sand	0	12	
Blue mucky sand	12	16	
Wet sand	16	23	
Blue mucky clay	23	30	
Brown mucky clay	30	50	
Brown shaly rock	50	58	
Grey broken rock	58	70	
Broken brown & red rock			
little clay	70	85	
Grey rock med.	85	95	
Grey basalt hard	95	100	

Work started Oct 21 19 82 Completed Oct 22 19 82

Date well drilling machine moved off of well October 25 19 82

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

(Signed) _____ Date _____ 19 _____

Drilling Machine Operator's License No. 841

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name Hansen Drilling Co., Inc. (Type or print)

Address 6711 NE 58th Ave. Vancouver, Washington 986

(Signed) John Hansen (Water Well Contractor)

Contractor's License No. 604 Date October 25 19 82

WATER RESOURCES DEPARTMENT.

SALEM, OREGON 97310

within 30 days from the date of well completion

SP-333-489

CRAW00017734

WATER WELL REPORT
STATE OF OREGON

OCT 26 1982
WATER RESOURCES DEPT.
SALEM, OREGON

State Well No.

State Permit No.

1N/1E-19a 3c

(1) OWNER:

Name Northwest Natural Gas Co.
Address 123 Flinders St.
City Portland State Ore. Zip 97209

(2) TYPE OF WORK (check)

New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Heavy Air ☐ Drive ☐ Drilling ☐ Intake ☐ Municipal ☐
Heavy Mud ☐ Dig ☐ Irrigation ☐ Test Well ☐ Other ☐
Casing ☐ Bored ☐ Thermal ☐ Wellhead ☐ Reservoir ☐

(4) PROPOSED USE (check):

(5) CASING INSTALLED: Steel ☒ Plastic ☐
Threaded ☐ Welded ☐

10" Diam. from 0 ft. to 20 ft. Gauge
" Diam. from ft. to ft. Gauge

LINER INSTALLED:

" Diam. from ft. to ft. Gauge

(6) PERFORATIONS:

Perforated? ☐ Yes ☐ No

Type of perforator used

Size of perforations in by in
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:

Well screen installed? ☐ Yes ☐ No

Manufacturer's Name

Type

Model No.

Slot Size Set from ft. to ft.

Slot Size Set from ft. to ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level.

Is a pump test made? ☐ Yes ☐ No If yes, by whom?

gal/min with ft. drawdown after hrs.

gal/min with drill stem at ft. drawdown after hrs.

gal/min with ft. drawdown after hrs.

g.p.m.

pressure of water Depth artesian flow encountered ft.

CONSTRUCTION:

Special standards: Yes ☐ No ☐

Seal—Material used Cement

Sealed from land surface to 20 ft.

meter of well bore to bottom of seal 14 in.

meter of well bore below seal 8 3/4 in.

Number of sacks of cement used in well annulus 4 sacks

How was cement grout placed? Pumped

Pump installed? Type HP Depth ft.

Is drive shoe used? ☐ Yes ☐ No Flaps Star location ft.

Any strata contain unusable water? ☐ Yes ☐ No

of Water? depth of strata

Used of casing strata off

Well gravel packed? ☐ Yes ☐ No Size of gravel

Placed from ft. to ft.

(10) LOCATION OF WELL:

County Multnomah Driller's well number

NE Section 19 T 17 N R 15 W.M.

Address of well location: NW, Front Ave. 3 Kittredge Ave.

Plat 25 - 24

(11) WATER LEVEL: Completed well.

Depth at which water was first found ft.

Static level ft. below land surface. Date

Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing ft.

Depth drilled 100 ft. Depth of completed well ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Sand	0	12	
Blue mucky sand	12	16	
Wet sand	16	23	
Blue mucky clay	23	30	
Brown mucky clay	30	58	
Grey broken rock Hard	58	68	
Broken brown & red rock			
Little clay	68	95	
Grey basalt	95	100	

Work started Oct. 20 19 82 Completed Oct. 21 19 82

Date well drilling machine moved off of well October 21 19 82

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

(Signed) _____ Date 19

Drilling Machine Operator's License No. 641

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name Hansen Drilling Co.

(Person, firm or corporation) (Type or print)

Address 6211 NE 58th Ave. Vancouver, Washington 98661

(Signed) Jim Hansen

(Water Well Contractor)

Contractor's License No. 604 Date October 25 19 82

NOTICE TO WATER WELL CONTRACTOR

The original and four copies of this report are to be filed with the

WATER RESOURCES DEPARTMENT,

SALEM, OREGON 97310

within 30 days from the date of well completion

SP-1265-680

CRAW00017735

The original and first copy of this report are to be filed with the

RECEIVED
JAN 31 1972

WATER WELL REPORT

RECEIVED
FEB 28 1972

4 p.1

STATE ENGINEER, SALEM, OREGON
within 30 days from the date of well completion.

STATE ENGINEER
SALEM, OR.

STATE ENGINEER
SALEM, OR.

Well No. 1N/1-7a

(1) OWNER:

Name Claremont School/School District #1
Address 1314 N.E. Grand Ave.-Portland-Ore-
97232

(2) TYPE OF WORK (check): Cathodic Grounded

New Well ☐ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in item 12.

(3) TYPE OF WELL:

Rotary ☒ Driven ☐
Cable ☐ Jetted ☐
Dug ☐ Bored ☐

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☒

(5) CASING INSTALLED:

Threaded ☐ Welded ☒
10" Diam. from 0 ft. to 19 ft. Gage 350
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(6) PERFORATIONS:

Perforated? ☐ Yes ☒ No
Type of perforator used
Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:

Well screen installed? ☐ Yes ☒ No
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☒ No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Ballor test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m.
Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Well seal—Material used Cement
Well sealed from land surface to 19 ft.
Diameter of well bore to bottom of seal 15 in.
Diameter of well bore below seal in.
Number of sacks of cement used in well seal sacks
Number of sacks of bentonite used in well seal sacks
Brand name of bentonite
Number of pounds of bentonite per 100 gallons of water lbs./100 gals.
Was a drive shoe used? ☐ Yes ☒ No Flange Size: location ft.
Did any strata contain unwatered water? ☐ Yes ☒ No
Type of water? depth of strata
Method of sealing strata off
Was well gravel packed? ☐ Yes ☒ No Size of gravel:
Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County Multnomah Driller's well number
N.E. Section 7 T. 1N R. 1E W.M.
Bearing and distance from section or subdivision corner
(SEE ATTACHED DRAWING)

(11) WATER LEVEL: Completed well.

Depth at which water was first found ft.
Static level ft. below land surface. Date
Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing 9"
Depth drilled 394 ft. Depth of completed well 394 ft.

Formation: Describe color, texture, grain size and structure of materials, and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata

MATERIAL	From	To	SWL
fill sand	0	6	
fine brown sand	6	14	
coarse sand & small gravel	14	38	
loose gravel (lost circula)	38	74	
fine brown sand & silt	74	113	
cement gravel	113	140	
loose gravel & boulders			
(lost circulation)	140	143	
cement gravel	143	163	
loose gravel (lost circula)	163	166	
cement gravel	166	211	
cemented brown sand	211	226	
cemented sand & gravel	226	283	
cement sand	273	281	
cement sand, gravel			
boulders	281	394	

Work started 4-23 1971 Completed 5-3 1971
Date well drilling machine moved off of well 5-3 1971

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

(Signed) Jamie K. Pisanich Date 1-26 1972
(Drilling Machine Operator) 498

Drilling Machine Operator's License No. 498

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name Hansen Drilling Co., Inc.
(Firm, (firm or corporation) (Type or print)

Address 6711 N.E. 58th Ave.-Vancouver-Wash.

(Signed) J. E. Hansen
(Water Well Contractor) J. E. Hansen

Contractor's License No. 400 Date 1-26 1972

(USE ADDITIONAL SHEETS IF NECESSARY)

SP-1303a-118

CRAW00017736

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 12/07/88
DATE EXTRACTED: 12/09/88
DATE ANALYZED: 12/15/88
WORK ORDER #: 881315

PCB Analyses
EPA Methods 3550/8080
mg/Kg (ppm) Dry Weight Basis

Sample Name:
Lab Code:

SE/E-4-20'
1315-9

SE/E-5-10'
1315-10

	Estimated MDL		
Arochlor:			
1016	1.0	ND	ND
1221	1.0	ND	ND
1232	1.0	ND	ND
1242	1.0	ND	ND
1248	0.9	ND	ND
1254	0.8	ND	ND
1260	0.7	ND	ND
Total Arochlors	1.0	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dave Schuman

Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 12/12/88
DATE EXTRACTED: 12/13/88
DATE ANALYZED: 12/19-23/88
WORK ORDER #: 881333

PCB Analyses
EPA Modified Methods 3550/8080
mg/Kg (ppm) Dry Weight Basis

Sample Name:		SE/E-6-20	SE/E-7-10	SE/E-8-20
Lab Code:		1333-9	1333-10	1333-11
	Estimated MDL			
Arochlor:				
1016	1.0	ND	ND	ND
1221	1.0	ND	ND	ND
1232	1.0	ND	ND	ND
1242	1.0	ND	ND	ND
1248	0.9	ND	ND	ND
1254	0.8	ND	ND	ND
1260	0.7	ND	ND	ND
Total Arochlors	1.0	ND	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by: Dore Siller Date: 1/4/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 12/12/88
DATE EXTRACTED: 12/13/88
DATE ANALYZED: 12/19-23/88
WORK ORDER #: 881333

PCB Analyses
EPA Modified Methods 3550/8080
mg/Kg (ppm) Dry Weight Basis

Sample Name: Lab Code:		SE/E-9-15 1333-12	SE/E-10-25 1333-13	SE/E-11-15 1333-14
	Estimated MDL			
Arochlor:				
1016	1.0	ND	ND	ND
1221	1.0	ND	ND	ND
1232	1.0	ND	ND	ND
1242	1.0	ND	ND	ND
1248	0.9	ND	ND	ND
1254	0.8	ND	ND	ND
1260	0.7	ND	ND	ND
Total Arochlors	1.0	ND	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by: Dave S. L. / Date: 1/4/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 12/12/88
DATE EXTRACTED: 12/13/88
DATE ANALYZED: 12/19-23/88
WORK ORDER #: 881333

PCB Analyses
EPA Modified Methods 3550/8080
mg/Kg (ppm) Dry Weight Basis

Sample Name:		SE/E-12-15	SE/E-13-10	HA-1
Lab Code:		1333-15	1333-16	1333-17
	Estimated MDL			
Arochlor:				
1016	1.0	ND	ND	ND
1221	1.0	ND	ND	ND
1232	1.0	ND	ND	ND
1242	1.0	ND	ND	ND
1248	0.9	ND	ND	ND
1254	0.8	ND	ND	ND
1260	0.7	ND	ND	ND
Total Arochlors	1.0	ND	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by: Dave Schell

Date: 1/4/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Encon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 12/12/88
DATE EXTRACTED: 12/13/88
DATE ANALYZED: 12/19-23/88
WORK ORDER #: 881333

PCB Analyses
EPA Modified Methods 3550/8080
mg/Kg (ppm) Dry Weight Basis

Sample Name: Lab Code:		HA-2 1333-18	HA-3 1333-19	HA-4 1333-20
	Estimated MDL			
Arochlor:				
1016	1.0	ND	ND	ND
1221	1.0	ND	ND	ND
1232	1.0	ND	ND	ND
1242	1.0	ND	ND	ND
1248	0.9	ND	ND	ND
1254	0.8	ND	ND	ND
1260	0.7	ND	ND	ND
Total Arochlors	1.0	ND	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by: Dave Zelnick

Date: 1/4/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's
SAMPLE DESCRIPTION: ~~Water~~ SOIL

DATE COLLECTED: 12/05-06/88
DATE RECEIVED: 12/07/88
WORK ORDER #: 881315

Oil and Grease
(%)
Dry Weight Basis

Sample Name	Lab Code	Oil and Grease
SE/E-1-10'	1315-6	<0.02
SE/E-2-10'	1315-7	0.068
SE/E-3-10'	1315-8	<0.02
SE/E-4-20'	1315-9	<0.02
SE/E-5-10'	1315-10	<0.02

Approved by Mike Shelton Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/07/88
DATE ANALYZED: 12/16/88
WORK ORDER #: 881315

Total Organic Halogens (TOX)
EPA Method 9020
ug/L (ppb)

<u>Sample Name</u>	<u>Lab Code</u>	<u>Estimated MDL</u>	<u>Measured Concentration</u>
SE/E-1	1315-1	5	39
SE/E-3	1315-3	5	34
SE/E-4	1315-4	5	44
SE/E-5	1315-5	5	21

MDL means Method Detection Limit
ND means None Detected

Approved by Dave Erickson Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Greyco/St. John's
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/12-13/88
DATE ANALYZED: 12/16-19/88
WORK ORDER #: 881333

Total Organic Halogens (TOX)
EPA Method 9020
ug/L (ppb)

<u>Sample Name</u>	<u>Lab Code</u>	<u>Estimated MDL</u>	<u>Measured Concentration</u>
SE/E-7	1333-2	5	26
SE/E-8	1333-3	5	13
SE/E-9	1333-4	5	28
SE/E-10	1333-5	5	14
SE/E-11	1333-6	5	12
SE/E-12	1333-7	5	7
SE/E-13	1333-8	5	17
HA-4W	1333-21	5	45

MDL means Method Detection Limit
ND means None Detected

Approved by Steve Henshaw Date 12/28/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Greyco/St. John's
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 12/12/88
WORK ORDER #: 881333

Oil and Grease
(*)
Dry Weight Basis

<u>Sample Name</u>	<u>Lab Code</u>	<u>Oil and Grease</u>
SE/6-20	1333-9	<0.02
SE/7-10	1333-10	<0.02
SE/8-20	1333-11	0.054
SE/9-15	1333-12	<0.02
SE/10-25	1333-13	<0.02
SE/11-15	1333-14	<0.02
SE/12-15	1333-15	<0.02
SE/13-10	1333-16	<0.02
HA-1	1333-17	<0.02
HA-2	1333-18	0.052
HA-3	1333-19	0.056
HA-4	1333-20	<0.02

MDL means Method Detection Limit
ND means None Detected

Approved by C. Duplaga Date 1/4/89

APPENDIX F

GROUND WATER QUALITY RESULTS

GRAYCO-R.315 LK
T8701.01

Rev. 1 3/15/89

CRAW00017746

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon DATE RECEIVED: 12/07/88
SUBMITTED BY: Steve Henshaw DATE EXTRACTED: 12/11/88
PROJECT: Grayco/St. John's DATE ANALYZED: 12/19/88
SAMPLE DESCRIPTION: Water WORK ORDER #: 881315

EPA Base Neutral Priority Pollutants
EPA Methods 3510/8270
ug/L (ppb)

SE/E-2
1315-2

COMPOUND	ESTIMATED MDL	
Bis(2-chloroethyl)ether	5	ND
1,3-Dichlorobenzene	3	ND
1,4-Dichlorobenzene	3	ND
1,2-Dichlorobenzene	3	ND
Bis(2-chloroisopropyl)ether	3	ND
N-Nitrosodi-n-propyl amine	2	ND
Hexachloroethane	1	ND
Nitrobenzene	1	ND
Isophorone	1	ND
Bis(2-Chloroethoxy)methane	6	ND
1,2,4-Trichlorobenzene	1	ND
Naphthalene	1	ND
Hexachlorobutadiene	3	ND
Hexachlorocyclopentadiene	30	ND
2-Chloronaphthalene	1	ND
Dimethylphthalate	2	ND
Acenaphthylene	1	ND
2,6-Dinitrotoluene	3	ND
Acenaphthene	1	ND
2,4-Dinitrotoluene	3	ND
N-Nitrosodiphenylamine	1	ND
Fluorene	1	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dan Sullivan Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/07/88
DATE EXTRACTED: 12/11/88
DATE ANALYZED: 12/19/88
WORK ORDER #: 881315

EPA Base Neutral Priority Pollutants (continued)
EPA Methods 3510/8270
ug/L (ppb)

COMPOUND	ESTIMATED MDL	SE/E-2
		1315-2
Diethylphthalate	2	ND
4-Chlorophenyl phenyl ether	2	ND
4-Bromophenyl phenyl ether	2	ND
Hexachlorobenzene	1	ND
Phenanthrene	1	ND
Anthracene	1	ND
Dibutylphthalate	5	ND
Fluoranthene	1	ND
Pyrene	1	ND
Benzidine	50	ND
Butyl benzyl phthalate	10	ND
Benzo(a)anthracene	2	ND
Chrysene	2	ND
Bis(2-ethylhexyl)phthalate	10	ND
3,3'-Dichlorobenzidine	30	ND
Di-n-octyl phthalate	10	ND
Benzo(b)fluoranthene	2	ND
Benzo(k)fluoranthene	2	ND
Benzo(a)pyrene	2	ND
Indeno(1,2,3-c,d)pyrene	3	ND
Dibenzo(a,h)anthracene	3	ND
Benzo(g,h,i)perylene	3	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dave Sullivan

Date 12/24/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/07/88
DATE EXTRACTED: 12/11/88
DATE ANALYZED: 12/19/88
WORK ORDER #: 881315

EPA Acid Extractables Priority Pollutants
EPA Methods 3510/8270
ug/L (ppb)

Sample Name:
Lab Code:

SE/E-2
1315-2

COMPOUND	ESTIMATED MDL	
Phenol	5	ND
2-Chlorophenol	5	ND
2-Nitrophenol	10	ND
2,4-Dimethylphenol	5	ND
2,4-Dichlorophenol	8	ND
4-Chloro-3-methylphenol	5	ND
2,4,6-Trichlorophenol	10	ND
2,4-Dinitrophenol	30	ND
4-Nitrophenol	20	ND
2-Methyl-4,6-dinitrophenol	20	ND
Pentachlorophenol	10	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Don E. Emcon

Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.
Analytical Report

CAS

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/07/88
DATE ANALYZED: 12/13/88
WORK ORDER #: 881315

EPA Volatile Priority Pollutant Analysis
EPA Method 8240
ug/L (ppb)

<u>Compound</u>	<u>Estimated MDL</u>	<u>Sample Name: Lab Code:</u>	<u>SE-E-2 1315-2</u>
Chloromethane	1		ND
Vinyl Chloride	1		ND
Bromomethane	1		ND
Chloroethane	1		ND
Trichlorofluoromethane	1		ND
1,1-Dichloroethane	1		ND
Acetone	10		ND
Carbon Disulfide	1		ND
Methylene Chloride	5		ND
Trans 1,2-Dichloroethene	1		ND
2-Butanone (MEK)	10		ND
1,1-Dichloroethane	1		ND
Chloroform	1		ND
1,1,1-Trichloroethane	1		ND
Carbon Tetrachloride	1		ND
Benzene	1		ND
1,2-Dichloroethane	1		ND
Vinyl Acetate	10		ND
Trichloroethene	1		ND
1,2-Dichloropropane	1		ND
Bromodichloromethane	1		ND
2-Chloroethylvinyl ether	10		ND
Trans 1,3-Dichloropropene	1		ND
2-Hexanone	10		ND
4-Methyl-2-Pentanone (MIBK)	10		ND
Toluene	1		ND
Cis 1,3-Dichloropropene	1		ND
1,1,2-Trichloroethane	1		ND
Tetrachloroethene	1		ND
Dibromochloromethane	1		ND
Chlorobenzene	1		ND
Ethylbenzene	1		ND
Styrene	1		ND
Total Xylenes	1		ND
Bromoform	1		ND
1,1,2,2-Tetrachloroethane	1		ND
1,3-Dichlorobenzene	1		ND
1,4-Dichlorobenzene	1		ND
1,2-Dichlorobenzene	1		ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dave Sullivan Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
 SUBMITTED BY: Steve Henshaw
 PROJECT: Grayco/St. John's Riverfront
 SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/12/88
 DATE EXTRACTED: 12/16/88
 DATE ANALYZED: 12/21/88
 WORK ORDER #: 881333

EPA Base Neutral Priority Pollutants
 EPA Methods 3510/8270
 ug/L (ppb)

SE/E-6
 1333-1

COMPOUND	ESTIMATED MDL	NOTES
Bis(2-chloroethyl) ether	5	ND
1,3-Dichlorobenzene	3	ND
1,4-Dichlorobenzene	3	ND
1,2-Dichlorobenzene	3	ND
Bis(2-chloroisopropyl) ether	3	ND
N-Nitrosodi-n-propyl amine	2	ND
Hexachloroethane	1	ND
Nitrobenzene	1	ND
Isophorone	1	ND
Bis(2-Chloroethoxy)methane	6	ND
1,2,4-Trichlorobenzene	1	ND
Naphthalene	1	ND
Hexachlorobutadiene	3	ND
Hexachlorocyclopentadiene	30	ND
2-Chloronaphthalene	1	ND
Dimethylphthalate	2	ND
Acenaphthylene	1	ND
2,6-Dinitrotoluene	3	ND
Acenaphthene	1	ND
2,4-Dinitrotoluene	3	ND
N-Nitrosodiphenylamine	1	ND
Fluorene	1	ND

MDL means Method Detection Limit
 ND means None Detected

Approved by Dave Sullivan

Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
 SUBMITTED BY: Steve Henshaw
 PROJECT: Grayco/St. John's Riverfront
 SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/12/88
 DATE EXTRACTED: 12/16/88
 DATE ANALYZED: 12/21/88
 WORK ORDER #: 881333

EPA Base Neutral Priority Pollutants (continued)
 EPA Methods 3510/8270
 ug/L (ppb)

SE/E-6
 1333-1

<u>COMPOUND</u>	<u>ESTIMATED MDL</u>	<u>NOTES</u>
Diethylphthalate	2	ND
4-Chlorophenyl phenyl ether	2	ND
4-Bromophenyl phenyl ether	2	ND
Hexachlorobenzene	1	ND
Phenanthrene	1	ND
Anthracene	1	ND
Dibutylphthalate	5	ND
Fluoranthene	1	ND
Pyrene	1	ND
Benzidine	50	ND
Butyl benzyl phthalate	5	ND
Benzo(a)anthracene	2	ND
Chrysene	2	ND
Bis(2-ethylhexyl)phthalate	5	ND
3,3'-Dichlorobenzidine	30	ND
Di-n-octyl phthalate	5	ND
Benzo(b)fluoranthene	2	ND
Benzo(k)fluoranthene	2	ND
Benzo(a)pyrene	2	ND
Indeno(1,2,3-c,d)pyrene	3	ND
Dibenzo(a,h)anthracene	3	ND
Benzo(g,h,i)perylene	3	ND

MDL means Method Detection Limit
 ND means None Detected

Approved by Dave Williams

Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Encon
 SUBMITTED BY: Steve Henshaw
 PROJECT: Grayco/St. John's Riverfront
 SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/12/88
 DATE EXTRACTED: 12/16/88
 DATE ANALYZED: 12/21/88
 WORK ORDER #: 881333

EPA Acid Extractables Priority Pollutants
 EPA Methods 3510/8270
 ug/L (ppb)

Sample Name:
 Lab Code:

SE/E-6
 1333-6

COMPOUND	ESTIMATED MDL	
Phenol	5	ND
2-Chlorophenol	5	ND
2-Nitrophenol	10	ND
2,4-Dimethylphenol	5	ND
2,4-Dichlorophenol	8	ND
4-Chloro-3-methylphenol	5	ND
2,4,6-Trichlorophenol	10	ND
2,4-Dinitrophenol	30	ND
4-Nitrophenol	20	ND
2-Methyl-4,6-dinitrophenol	20	ND
Pentachlorophenol	10	ND

MDL means Method Detection Limit
 ND means None Detected

Approved by Deon S. L. [Signature]

Date 12/23/88

CLIENT: Sweet - Edwards/Emcon
 SUBMITTED BY: Steve Henshaw
 PROJECT: Grayco/St. John's Riverfront
 SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/07/88
 DATE ANALYZED: 12/13/88
 WORK ORDER #: 881315

EPA Volatile Priority Pollutant Analysis

EPA Method 8240

ug/L (ppb)

Compound	Estimated MDL	Sample Name: Lab Code:	SE-E-6 1333-1
Chloromethane	1		ND
Vinyl Chloride	1		ND
Bromomethane	1		ND
Chloroethane	1		ND
Trichlorofluoromethane	1		ND
1,1-Dichloroethene	1		ND
Acetone	10		ND
Carbon Disulfide	1		ND
Methylene Chloride	5		ND
Trans 1,2-Dichloroethene	1		ND
2-Butanone (MEK)	10		ND
1,1-Dichloroethane	1		ND
Chloroform	1		ND
1,1,1-Trichloroethane	1		ND
Carbon Tetrachloride	1		ND
Benzene	1		ND
1,2-Dichloroethane	1		ND
Vinyl Acetate	10		ND
Trichloroethene	1		ND
1,2-Dichloropropane	1		ND
Bromodichloromethane	1		ND
2-Chloroethylvinyl ether	10		ND
Trans 1,3-Dichloropropene	1		ND
2-Hexanone	10		ND
4-Methyl-2-Pentanone (MIBK)	10		ND
Toluene	1		ND
Cis 1,3-Dichloropropene	1		ND
1,1,2-Trichloroethane	1		ND
Tetrachloroethene	1		ND
Dibromochloromethane	1		ND
Chlorobenzene	1		ND
Ethylbenzene	1		ND
Styrene	1		ND
Total Xylenes	1		ND
Bromoform	1		ND
1,1,2,2-Tetrachloroethane	1		ND
1,3-Dichlorobenzene	1		ND
1,4-Dichlorobenzene	1		ND
1,2-Dichlorobenzene	1		ND

MDL means Method Detection Limit

ND means None Detected

Approved by Dave Spitzman, IDate 12/23/88



Sweet-Edwards/EMCON, Inc.

Ground Water, Engineering, Waste Management, & Drilling Services

506 Royal • P.O. Drawer B • Kelso, WA 98626-3409
Office (206) 423-3580 • FAX (206) 423-7518

March 15, 1989

Mr. Edward L. Allis
Grayco Resources, Inc.
5331 S.W. Macadam
Suite 200
Portland, OR 97201

RE: ST. JOHNS RIVERFRONT PROPERTY - LEVEL II ENVIRONMENTAL
ASSESSMENT

Dear Nick:

SE/E is pleased to submit three copies of our draft report titled
"Level II Environmental Site Assessment - St. Johns Riverfront
Property, Portland, Oregon".

Please let me know when you have had a chance to review the
report so that we can schedule a meeting to discuss any questions
you may have.

Respectfully submitted,

SWEET-EDWARDS/EMCON, INC.

KENT MATHIOT
Senior Project Geologist

lhk

Enc: Draft Report (3)

GRAYCO-L.315 LK
T8701.01

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CRAW00017755

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Encon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/07/88
DATE ANALYZED: 12/19/88
WORK ORDER #: 881315

Chlorinated Phenolic Compounds
EPA Method 3510/Modified 8150
ug/L (ppb)

<u>Sample Name</u>	<u>Lab Code</u>	<u>Estimated MDL</u>	<u>Total Tetrachloro- phenols</u>	<u>Pentachloro- phenol</u>
SE/E-1	1315-1	10	ND	ND
SE/E-2	1315-2	10	ND	ND
SE/E-3	1315-3	10	ND	ND
SE/E-4	1315-4	10	ND	ND
SE/E-5	1315-5	10	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Don Sicora Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon	DATE RECEIVED: 12/07/88
SUBMITTED BY: Steve Henshaw	DATE EXTRACTED: 12/09/88
PROJECT: Grayco/St. John's	DATE ANALYZED: 12/15/88
SAMPLE DESCRIPTION: Water	WORK ORDER #: 881315

PCB Analyses
EPA Methods 35150/8080
ug/L (ppb)

Sample Name:		SE/E-4	SE/E-5
Lab Code:		1315-4	1315-5
	Estimated MDL		
Arochlor:			
1016	0.2	ND	ND
1221	0.2	ND	ND
1232	0.2	ND	ND
1242	0.2	ND	ND
1248	0.2	ND	ND
1254	0.2	ND	ND
1260	0.2	ND	ND
Total Arochlors	0.2	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dave Seidenman Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/12/88
DATE EXTRACTED: 12/16/88
DATE ANALYZED: 12/19-23/88
WORK ORDER #: 881333

PCB Analyses
EPA Methods 3510/8080
ug/L (ppb)

Sample Name: Lab Code:		SE/E-6 1333-1	SE/E-7 1333-2	SE/E-8 1333-3
	Estimated MDL			
Arochlor:				
1016	1.0	ND	ND	ND
1221	1.0	ND	ND	ND
1232	1.0	ND	ND	ND
1242	1.0	ND	ND	ND
1248	0.9	ND	ND	ND
1254	0.8	ND	ND	ND
1260	0.7	ND	ND	ND
Total Arochlors	1.0	ND	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by: Don Edlin Date: 1/4/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/12/88
DATE EXTRACTED: 12/16/88
DATE ANALYZED: 12/19-23/88
WORK ORDER #: 881333

PCB Analyses
EPA Methods 3510/8080
ug/L (ppb)

Sample Name:		SE/E-9	SE/E-10	SE/E-11
Lab Code:		1333-4	1333-5	1333-6
	<u>Estimated</u> <u>MDL</u>			
Arochlor:				
1016	1.0	ND	ND	ND
1221	1.0	ND	ND	ND
1232	1.0	ND	ND	ND
1242	1.0	ND	ND	ND
1248	0.9	ND	ND	ND
1254	0.8	ND	ND	ND
1260	0.7	ND	ND	ND
Total Arochlors	1.0	ND	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by: Dave Edlin Date: 1/4/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/12/88
DATE EXTRACTED: 12/16/88
DATE ANALYZED: 12/19-29/88
WORK ORDER #: 881333

PCB Analyses
EPA Methods 3510/8080
ug/L (ppb)

Sample Name: Lab Code:		SE/E-12 1333-7	SE/E-13 1333-8	HA-4W 1333-21
	Estimated MDL			
Arochlor:				
1016	1.0	ND	ND	ND
1221	1.0	ND	ND	ND
1232	1.0	ND	ND	ND
1242	1.0	ND	ND	ND
1248	0.9	ND	ND	ND
1254	0.8	2.5	1.6	ND
1260	0.7	ND	ND	ND
Total Arochlors	1.0	2.5	1.6	ND

MDL means Method Detection Limit
ND means None Detected

Approved by: D. W. S. / Date: 1/4/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Encon
 SUBMITTED BY: Steve Henshaw
 PROJECT: Grayco/St. John's Riverfront
 SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/07/88
 DATE EXTRACTED: 12/09/88
 DATE ANALYZED: 12/19-23/88
 WORK ORDER #: 881315

Polynuclear Aromatic Hydrocarbons
 EPA Methods 3510/8100
 ug/L (ppb)

Sample Name:		SE/E-1	SE/E-2
Lab Code:		1315-1	1315-2
	Estimated MDL		
Naphthalene	10	ND	ND
Acenaphthylene	10	ND	ND
Acenaphthene	10	ND	ND
Fluorene	10	ND	ND
Phenanthrene	10	ND	ND
Anthracene	10	ND	ND
Fluoranthene	10	ND	ND
Pyrene	10	ND	ND
Benzo (a) Anthracene	10	ND	ND
Chrysene	10	ND	ND
Benzo (b+k) Fluoranthene	10	ND	ND
Benzo (a) Pyrene	10	ND	ND
Indeno (1,2,3,cd) Pyrene	10	ND	ND
Dibenzo (a,h) Anthracene	10	ND	ND
Benzo (ghi) Perylene	10	ND	ND

MDL means Method Detection Limit
 ND means None Detected

Approved by Dave E. Henshaw

Date 1-4-89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/07/88
DATE EXTRACTED: 12/09/88
DATE ANALYZED: 12/19-23/88
WORK ORDER #: 881315

Polynuclear Aromatic Hydrocarbons
EPA Methods 3510/8100
ug/L (ppb)

Sample Name:		SE/E-3	SE/E-4
Lab Code:		1315-3	1315-4
	Estimated MDL		
Naphthalene	10	ND	ND
Acenaphthylene	10	ND	ND
Acenaphthene	10	ND	ND
Fluorene	10	ND	ND
Phenanthrene	10	ND	ND
Anthracene	10	ND	ND
Fluoranthene	10	ND	ND
Pyrene	10	ND	ND
Benzo (a) Anthracene	10	ND	ND
Chrysene	10	ND	ND
Benzo (b+k) Fluoranthene	10	ND	ND
Benzo (a) Pyrene	10	ND	ND
Indeno (1,2,3,cd) Pyrene	10	ND	ND
Dibenzo (a,h) Anthracene	10	ND	ND
Benzo (ghi) Perylene	10	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dave Schuman Date 1-4-89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Encon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/12/88
DATE EXTRACTED: 12/13/88
DATE ANALYZED: 12/19-29/88
WORK ORDER #: 881333

Polynuclear Aromatic Hydrocarbons
EPA Methods 3510/8100
ug/L (ppb)

Sample Name:		SE/E-6	SE/E-7
Lab Code:		1333-1	1333-2
	Estimated MDL		
Naphthalene	10	ND	ND
Acenaphthylene	10	ND	ND
Acenaphthene	10	ND	ND
Fluorene	10	ND	ND
Phenanthrene	10	ND	ND
Anthracene	10	ND	ND
Fluoranthene	10	ND	ND
Pyrene	10	ND	ND
Benzo (a) Anthracene	10	ND	ND
Chrysene	10	ND	ND
Benzo (b+k) Fluoranthene	10	ND	ND
Benzo (a) Pyrene	10	ND	ND
Indeno (1,2,3,cd) Pyrene	10	ND	ND
Dibenzo (a,h) Anthracene	10	ND	ND
Benzo (ghi) Perylene	10	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Don SCL

Date 1/4/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Encon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/12/88
DATE EXTRACTED: 12/13/88
DATE ANALYZED: 12/19-29/88
WORK ORDER #: 881333

Polynuclear Aromatic Hydrocarbons
EPA Methods 3510/8100
ug/L (ppb)

Sample Name:		SE/E-8	SE/E-9
Lab Code:		1333-3	1333-4
	Estimated MDL		
Naphthalene	10	ND	ND
Acenaphthylene	10	ND	ND
Acenaphthene	10	ND	ND
Fluorene	10	ND	ND
Phenanthrene	10	ND	ND
Anthracene	10	ND	ND
Fluoranthene	10	ND	ND
Pyrene	10	ND	ND
Benzo (a) Anthracene	10	ND	ND
Chrysene	10	ND	ND
Benzo (b+k) Fluoranthene	10	ND	ND
Benzo (a) Pyrene	10	ND	ND
Indeno (1,2,3,cd) Pyrene	10	ND	ND
Dibenzo (a,h) Anthracene	10	ND	ND
Benzo (ghi) Perylene	10	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dave Ellis

Date 1/4/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/12/88
DATE EXTRACTED: 12/13/88
DATE ANALYZED: 12/19-29/88
WORK ORDER #: 881333

Polynuclear Aromatic Hydrocarbons
EPA Methods 3510/8100
ug/L (ppb)

Sample Name:		SE/E-10	SE/E-11
Lab Code:		1333-5	1333-6
	Estimated MDL		
Naphthalene	10	ND	ND
Acenaphthylene	10	ND	ND
Acenaphthene	10	ND	ND
Fluorene	10	ND	ND
Phenanthrene	10	ND	ND
Anthracene	10	ND	ND
Fluoranthene	10	ND	ND
Pyrene	10	ND	ND
Benzo (a) Anthracene	10	ND	ND
Chrysene	10	ND	ND
Benzo (b+k) Fluoranthene	10	ND	ND
Benzo (a) Pyrene	10	ND	ND
Indeno (1,2,3,cd) Pyrene	10	ND	ND
Dibenzo (a,h) Anthracene	10	ND	ND
Benzo (ghi) Perylene	10	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dave Shick Date 1/4/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Encon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/12/88
DATE EXTRACTED: 12/13/88
DATE ANALYZED: 12/19-29/88
WORK ORDER #: 881333

Polynuclear Aromatic Hydrocarbons
EPA Methods 3510/8100
ug/L (ppb)

Sample Name:		SE/E-12	SE/E-13
Lab Code:		1333-7	1333-8
	Estimated MDL		
Naphthalene	10	ND	ND
Acenaphthylene	10	ND	ND
Acenaphthene	10	ND	ND
Fluorene	10	ND	ND
Phenanthrene	10	ND	ND
Anthracene	10	ND	ND
Fluoranthene	10	ND	ND
Pyrene	10	ND	ND
Benzo (a) Anthracene	10	ND	ND
Chrysene	10	ND	ND
Benzo (b+k) Fluoranthene	10	ND	ND
Benzo (a) Pyrene	10	ND	ND
Indeno (1,2,3,cd) Pyrene	10	ND	ND
Dibenzo (a,h) Anthracene	10	ND	ND
Benzo (ghi) Perylene	10	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dave Schinner / Date 1/4/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 12/12/88
DATE EXTRACTED: 12/13/88
DATE ANALYZED: 12/19-29/88
WORK ORDER #: 881333

Polynuclear Aromatic Hydrocarbons
EPA Methods 3510/8100
ug/L (ppb)

Sample Name:
Lab Code:

HA-4W
1333-21

	Estimated MDL	
Naphthalene	10	ND
Acenaphthylene	10	ND
Acenaphthene	10	ND
Fluorene	10	ND
Phenanthrene	10	ND
Anthracene	10	ND
Fluoranthene	10	ND
Pyrene	10	ND
Benzo (a) Anthracene	10	ND
Chrysene	10	ND
Benzo (b+k) Fluoranthene	10	ND
Benzo (a) Pyrene	10	ND
Indeno (1,2,3,cd) Pyrene	10	ND
Dibenzo (a,h) Anthracene	10	ND
Benzo (ghi) Perylene	10	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dan Eickel

Date 1/4/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's Riverfront
SAMPLE DESCRIPTION: Water

WORK ORDER #: 881431

Dissolved Metals
mg/L

Sample Name:	SE/E-1	SE/E-2	SE/E-3
Lab Code:	1431-1	1431-2	1431-3
Cadmium	<0.005	<0.005	<0.005
Chromium	<0.005	0.005	<0.005
Copper	<0.01	<0.01	<0.01
Lead	0.004	0.003	0.002

Note: Samples analyzed from unpreserved portion collected for volatile organics.

Approved by

Mike Shelton

Date

*1/5/88*⁹

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's
SAMPLE DESCRIPTION: Water

DATE COLLECTED: 12/05-06/88
DATE RECEIVED: 12/07/88
WORK ORDER #: 881315

Total Metals
mg/L

Sample Name:	SE/E-1	SE/E-2	SE/E-3
Lab Code:	1315-1	1315-2	1315-3
Antimony	<0.05	<0.05	<0.05
Arsenic	0.007	0.012	0.025
Beryllium	0.03	<0.01	<0.02
Cadmium	0.03	0.01	0.05
Chromium	0.54	0.25	1.8
Copper	2.1	0.93	3.0
Lead	0.21	0.30	0.41
Mercury	0.0006	<0.0002	0.0014
Nickel	0.56	0.27	2.1
Selenium	<0.01	<0.01	<0.01
Silver	<0.1	<0.02	<0.1
Thallium	0.011	0.010	0.014
Zinc	2.2	1.4	7.1

Approved by

Mike Shelton

Date

12/23/83

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon DATE COLLECTED: 12/05-06/88
SUBMITTED BY: Steve Henshaw DATE RECEIVED: 12/07/88
PROJECT: Grayco/St. John's WORK ORDER #: 881315
SAMPLE DESCRIPTION: Water

Total Metals
mg/L

Sample Name:	SE/E-4	SE/E-5
Lab Code:	1315-4	1315-5
Antimony	<0.05	<0.05
Arsenic	0.017	0.012
Beryllium	<0.005	<0.005
Cadmium	0.005	<0.005
Chromium	0.21	0.066
Copper	0.51	0.14
Lead	0.23	0.052
Mercury	0.0019	0.0003
Nickel	0.26	0.069
Selenium	<0.01	<0.01
Silver	<0.01	<0.01
Thallium	<0.006	0.006
Zinc	0.86	0.24

Approved by

Mike Shelton

Date

12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon DATE RECEIVED: 12/12/88
SUBMITTED BY: Steve Henshaw WORK ORDER #: 881333
PROJECT: Grayco/St. John's
SAMPLE DESCRIPTION: Water

Dissolved Metals
mg/L

Sample Name:	SE/E-6	SE/E-7	SE/E-8
Lab Code:	1333-1	1333-2	1333-3
Antimony	<0.05	<0.05	<0.05
Arsenic	<0.002	<0.002	<0.002
Beryllium	<0.005	<0.005	<0.005
Cadmium	<0.005	<0.005	<0.005
Chromium	<0.005	<0.005	<0.005
Copper	<0.01	<0.01	<0.01
Lead	<0.002	<0.002	<0.002
Mercury	<0.0002	<0.0002	<0.0002
Nickel	<0.01	<0.01	<0.01
Selenium	<0.002	<0.002	<0.002
Silver	<0.01	<0.01	<0.01
Thallium	<0.003	<0.003	<0.003
Zinc	0.015	0.018	0.023

Approved by

Mike Pelton

Date

12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon DATE RECEIVED: 12/12/88
SUBMITTED BY: Steve Henshaw WORK ORDER #: 881333
PROJECT: Grayco/St. John's
SAMPLE DESCRIPTION: Water

Dissolved Metals
mg/L.

Sample Name:	SE/E-9	SE/E-10	SE/E-11
Lab Code:	1333-4	1333-5	1333-6
Antimony	<0.05	<0.05	<0.05
Arsenic	<0.002	<0.002	<0.002
Beryllium	<0.005	<0.005	<0.005
Cadmium	<0.005	<0.005	<0.005
Chromium	<0.005	<0.005	<0.005
Copper	<0.01	<0.01	<0.01
Lead	0.008	0.003	0.003
Mercury	0.0002	0.0002	0.0002
Nickel	0.011	<0.01	<0.01
Selenium	<0.002	<0.002	<0.002
Silver	<0.01	<0.01	<0.01
Thallium	<0.003	<0.003	<0.003
Zinc	0.11	0.014	0.016

Approved by Mike Shelton Date 12/23/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon DATE RECEIVED: 12/12/88
SUBMITTED BY: Steve Henshaw WORK ORDER #: 881333
PROJECT: Grayco/St. John's
SAMPLE DESCRIPTION: Water

Dissolved Metals
mg/L

Sample Name:	SE/E-12	SE/E-13	HA-4W
Lab Code:	1333-7	1333-8	1333-21
Antimony	<0.05	<0.05	<0.05
Arsenic	<0.002	<0.002	<0.002
Beryllium	<0.005	<0.005	<0.005
Cadmium	<0.005	<0.005	<0.005
Chromium	<0.005	<0.005	<0.005
Copper	<0.01	<0.01	<0.01
Lead	<0.002	0.005	0.002
Mercury	0.0002	0.0002	<0.0002
Nickel	<0.01	0.011	<0.01
Selenium	<0.002	<0.002	<0.002
Silver	<0.01	<0.01	<0.01
Thallium	<0.003	<0.003	<0.003
Zinc	0.026	0.018	<0.01

Approved by

Mike Pelton

Date

12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON
SUBMITTED BY: Kent Mathiot
PROJECT: Grayco/T8701.01
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/29/89
DATE EXTRACTED: 01/31/89
DATE ANALYZED: 02/03/89
WORK ORDER #: 89163

PCB Analyses
EPA Methods 3510/8080
ug/L (ppb)

Sample Name:		SE/E 14 UF	SE/E 14 F	SE/E 19 F
Lab Code:		163-5	163-6	163-11
	Estimated MDL			
Aroclor:				
1016	0.1	ND	ND	ND
1221	0.1	ND	ND	ND
1232	0.1	ND	ND	ND
1242	0.1	ND	ND	ND
1248	0.1	ND	ND	ND
1254	0.1	ND	ND	ND
1260	0.1	ND	ND	ND
Total Aroclors	0.1	ND	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by:

Colin Elliott

Date:

2/15/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON
SUBMITTED BY: Kent Mathiot
PROJECT: Grayco/T8701.01
SAMPLE DESCRIPTION: Oil Layer Only

DATE RECEIVED: 01/29/89
DATE EXTRACTED: 01/31/89
DATE ANALYZED: 02/03/89
WORK ORDER #: 89163

PCB Analyses
EPA Methods 3580/8080
mg/Kg (ppm)
As Received Basis

Sample Name:
Lab Code:

SE/E 19 UF*
163-10

	Estimated MDL	
Aroclor:		
1016	1	ND
1221	1	ND
1232	1	ND
1242	1	ND
1248	1	ND
1254	1	ND
1260	1	ND
Total Aroclors	1	ND

MDL means Method Detection Limit

ND means None Detected

* oil layer present in sample analyzed

Approved by:

Col. Elliott

Date: 2/15/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON
SUBMITTED BY: Kent Mathiot
PROJECT: Grayco/T8701.01
SAMPLE DESCRIPTION: Oil Layer Only

DATE RECEIVED: 01/29/89
DATE EXTRACTED: 01/31/89
DATE ANALYZED: 02/03/89
WORK ORDER #: 89163

PCB Analyses
EPA Methods 3580/8080
mg/Kg (ppm)
As Received Basis

Sample Name:
Lab Code:

SE/E 19 UF*
163-10

	Estimated MDL	
Aroclor:		
1016	1	ND
1221	1	ND
1232	1	ND
1242	1	ND
1248	1	ND
1254	1	ND
1260	1	ND
Total Aroclors	1	ND

MDL means Method Detection Limit

ND means None Detected

* oil layer present in sample analyzed

Approved by:

Clin Elliott

Date: 2/15/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON
SUBMITTED BY: Kent Mathiot
PROJECT: Grayco T8701.01
SAMPLE DESCRIPTION: Oil on Water

DATE RECEIVED: 01/29/89
DATE EXTRACTED: 02/22/89
DATE ANALYZED: 02/22/89
WORK ORDER #: 89317

Hydrocarbon Scan
EPA Methods 3510/Modified 8015
mg/L (ppm)

<u>Sample Name</u>	<u>Lab Code</u>	<u>Estimated</u> <u>MDL</u>	<u>Diesel</u>	<u>Gasoline</u>	<u>Oil</u>
SE/E 19	317-1	10	ND	ND	Yes

Note: This analysis was run to help identify the type of hydrocarbons found in the sample. The analysis was not meant to be an accurate quantitative measurement of the hydrocarbon content.

ND means None Detected
MDL means Method Detection Limit

Approved by Colin Elliott Date 3/1/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON
SUBMITTED BY: Kent Mathiot
PROJECT: Grayco T8710.01
SAMPLE DESCRIPTION: Oil on Water

DATE RECEIVED: 01/29/89
DATE ANALYZED: 02/22/89
WORK ORDER #: 89317

TRPH-IR Results
EPA Methods 418.1/413.2
mg/L

<u>Sample Name</u>	<u>Lab Code</u>	<u>Estimated MDL</u>	<u>Results</u>
SE/E 19 with Silica Gel	317-1	0.5	290*
SE/E 19 without Silica Gel	317-1	0.5	297**

* Non-Polar Petroleum Hydrocarbons

** Oil and Grease (polar and non-polar hydrocarbons)

MDL means Method Detection Limit

Approved by

Colin Elliott

Date

3/1/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON
SUBMITTED BY: Kent Mathiot
PROJECT: Grayco/T8701.01
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/29/89
WORK ORDER #: 89163

Hydrocarbon Scan
ug/L (ppb)

<u>Sample Name</u>	<u>Lab Code</u>	<u>Estimated</u> <u>MDL</u>	<u>Diesel</u>	<u>Gasoline</u>
River Water	163-12	100	4600	ND

MDL means Method Detection Limit
ND means None Detected

Approved by

Colin Elliott

Date

2/15/89

Analytical Report

CLIENT: Sweet - Edwards/EMCON
 SUBMITTED BY: Kent Mathiot
 PROJECT: Grayco/T8701.01
 SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/29/89
 DATE EXTRACTED: 02/06/89
 DATE ANALYZED: 02/08/89
 WORK ORDER: 89163

Pesticides/PCBs
 EPA Method 608
 ug/L (ppb)

Sample Name:
 Lab Code:

SE/E 17
163-7

COMPOUND	ESTIMATED MDL	
Pesticides:		
Alpha-BHC	2	ND
Gamma-BHC (Lindane)	2	ND
Beta-BHC	2	ND
Heptachlor	2	ND
Delta-BHC	2	ND
Aldrin	2	ND
Heptachlor Epoxide	2	ND
Alpha - Endosulfan	2	ND
4,4'-DDE	2	ND
Dieldrin	2	ND
Endrin	4	ND
4,4'-DDD	2	ND
Beta - Endosulfan	2	ND
4,4'-DDT	4	ND
Endrin Aldehyde	10	ND
Endosulfan Sulfate	10	ND
Methoxychlor	20	ND
Toxaphene	30	ND
Chlordane	20	ND
PCBs:		
Aroclor 1016	10	ND
1221	10	ND
1232	10	ND
1242	10	ND
1248	10	ND
1254	5	ND
1260	5	ND

MDL means Method Detection Limit
 ND means None Detected

Approved by: Colin Elliott

Date: 2/15/89

Analytical Report

CLIENT: Sweet - Edwards/EMOON
SUBMITTED BY: Kent Mathiot
PROJECT: Grayco/T8701.01
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/29/89
DATE ANALYZED: 02/02/89
WORK ORDER #: 89163

Volatile Organics Results
EPA Method 601
ug/L (ppb)

Sample Name: Lab Code:	Estimated MDL	SE/E 17 163-7
Chloromethane	3	ND
Vinyl Chloride	3	ND
Bromomethane	3	ND
Chloroethane	3	ND
1,1-Dichloroethene	1	ND
Methylene Chloride	1	ND
Trans 1,2-Dichloroethene	1	ND
Cis 1,2 Dichloroethene	1	ND
1,1-Dichloroethane	1	ND
Chloroform	1	ND
1,1,1-Trichloroethane	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloroethane	1	ND
Trichloroethene	1	ND
1,2-Dichloropropane	1	ND
Bromodichloromethane	1	ND
2-Chloroethylvinyl ether	10	ND
Trans 1,3-Dichloropropene	1	ND
Cis 1,3-Dichloropropene	1	ND
1,1,2-Trichloroethane	1	ND
Tetrachloroethene	1	ND
Dibromochloromethane	1	ND
Chlorobenzene	1	ND
Bromoform	1	ND
1,1,2,2-Tetrachloroethane	1	ND
1,3 Dichlorobenzene	1	ND
1,4 Dichlorobenzene	1	ND
1,2 Dichlorobenzene	1	ND

MDL means Method Detection Limit
ND means None Detected

Approved by

Colin Elliott

Date

2/15/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON DATE COLLECTED: 01/26/89
SUBMITTED BY: Kent Mathiot DATE RECEIVED: 01/29/89
PROJECT: Grayco/T8701.01 WORK ORDER #: 89163
SAMPLE DESCRIPTION: Water

Dissolved Metals
Units
mg/L

Sample Name: ...
Lab Code:

SE/E 17F
163-8

	<u>Method</u>	
Antimony	200.7	<0.05
Arsenic	206.2	<0.001
Beryllium	200.7	<0.005
Cadmium	200.7	<0.005
Chromium	200.7	<0.005
Copper	200.7	<0.01
Lead	239.2	<0.001
Mercury	245.1	<0.0002
Nickel	200.7	<0.02
Selenium	270.2	<0.001
Silver	200.7	<0.01
Thallium	279.1	<0.001
Zinc	200.7	0.024

Approved by

C Duplaga

Date

2/27/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON DATE COLLECTED: 01/26/89
SUBMITTED BY: Kent Mathiot DATE RECEIVED: 01/29/89
PROJECT: Grayco/T8701.01 WORK ORDER #: 89163
SAMPLE DESCRIPTION: Water

Total Metals
Units
mg/L

Sample Name: Lab Code:	Method	SE/E 17UF 163-9
Antimony	200.7	<0.05
Arsenic	206.2	0.003
Beryllium	200.7	<0.005
Cadmium	200.7	<0.005
Chromium	200.7	0.029
Copper	200.7	0.14
Lead	239.2	0.029
Mercury	245.1	0.0022
Nickel	200.7	0.064
Selenium	270.2	<0.001
Silver	200.7	<0.01
Thallium	279.1	0.002
Zinc	200.7	0.27

Approved by C. Auglass Date 2/22/89

APPENDIX G

CHAIN OF CUSTODY DOCUMENTATION

GRAYCO-R.315 LK
TB701.01

Rev. 1 3/15/89

CRAW00017785

Sweet-Edwards / EMCON, Inc.

Kelso, WA (208) 423-3580

Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 12-7-88 PAGE 1 OF 2

PROJECT <u>Grayco - St. Johns Riverfront Property</u>					ANALYSIS REQUESTED															GENERAL CHEMISTRY (Specify)										OTHER (Specify)					NUMBER OF CONTAINERS
CLIENT INFO. CONTACT <u>Report to Steve Henshaw - Portland</u>					BASE/NEUTRAL ORGANICS GC/MS 825/8270 VOLATILE ORGANICS GC/MS 824/8240 HALOGENATED VOLATILE ORGANICS 801/8010 PHENOLICS 804/8040 POLYNUCLEAR AROMATIC 810/8110 TOTAL ORGANIC CARBON (TOC) 415/9980 TOTAL ORGANIC HALIDE (TOX) 9020 EP TOX/TCLP METALS (each One) METALS (TOTAL) (See Special Inst.) TCLP ORGANICS PH, CORD ALK NO ₃ /NO ₂ -N SO ₄ Cu, Mg, Na, K Pb, Bi, Oil + Grease																														
ADDRESS _____																																			
TELEPHONE _____																																			
SAMPLER NAME <u>Steve Henshaw</u> PHONE _____																																			
SAMPLERS SIGNATURE _____																																			
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE																															
1. SE/E - 1-10	12-5-88			Soil																															1
2. SE/E - 2-10	"			Soil																															1
3. SE/E - 3-10	12-6-88			Soil																															1
4. SE/E - 4-20	"			Soil																															1
5. SE/E - 5-10	"			Soil																															1
6. S																																			
7.																																			
8.																																			

Relinquished By Sweet, Edwards & Assoc.		Relinquished By		Relinquished By		PROJECT INFORMATION		SAMPLE RECEIPT	
Signature <u>Lynn Simpson</u>	Signature	Signature	Shipping I.D. No.	Total No. of Containers					
Printed Name <u>Lynn Simpson</u>	Printed Name	Printed Name	VIA	Chain of Custody Seal					
Firm <u>SE/E</u>	Firm	Firm	Project	Received in good condition					
Date/Time <u>12-7-88 1534</u>	Date/Time	Date/Time	LAB NO.						
Received By <u>Fred Cooper</u>	Received By	Received By	SPECIAL INSTRUCTIONS/COMMENTS						
Signature <u>FRANK ADAM</u>	Signature	Signature							
Printed Name <u>FRANK ADAM</u>	Printed Name	Printed Name							
Firm <u>12/7/88 1534</u>	Firm	Firm							
Date/Time	Date/Time	Date/Time							

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEE 400-05

CRAW00017786



Sweet's Environmental Services, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Laboratory Analysis Request

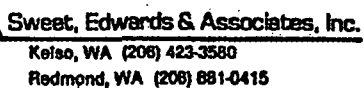
DATE 12-7-88 PAGE 2 OF 2

PROJECT <u>Grange - St. Johns Riverfront Property</u>					ANALYSIS REQUESTED															GENERAL CHEMISTRY (Specify)					OTHER (Specify)					NUMBER OF CONTAINERS
CLIENT INFO. CONTACT <u>Report to Henshaw - Portland</u>					BASE/NEU/ACID ORGANICS GC/MS/825/8270	VOLATILE ORGANICS GC/MS/824/8240	HALOGENATED VOLATILE ORGANICS GC/MS/801/8010	PHENOLICS GC/MS/8040	POLYNUCLEAR AROMATIC GC/MS/810/8310	TOTAL ORGANIC CARBON (TOC) 415/9080	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCUP METALS (Spec One)	METALS (TOTAL) (See Special Inst.)	TCUP ORGANICS	PH COND	ALK	NO₃/NO₂ CI	SO₄	Ca, Mg, Na, K	Pesticides/pesticides	PCBs									
ADDRESS																														
TELEPHONE																														
SAMPLERS NAME					PHONES																									
SAMPLERS SIGNATURE																														
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE																										
1. SE/E-1	12-5-88			Water					X	X	X									X	X		4							
2. SE/E-2	12-5-88				X	X			X			X								X	X		6							
3. SE/E-3	12-6-88								X	X	X									X	X		4							
4. SE/E-4	12-6-88								X	X	X									X	X		5							
5. SE/E-5	12-6-88								X	X	X									X	X		5							
6.																														
7.																														
8.																														
Relinquished By Sweet, Edwards & Assoc.					Relinquished By					Relinquished By					PROJECT INFORMATION					SAMPLE RECEIPT										
Signature <u>Lynn Simpson</u>					Signature					Signature					Shipping I.D. No.					Total No. of Containers										
Printed Name <u>Lynn Simpson</u>					Printed Name					Printed Name					VIA					Chain of Custody Seal										
Firm <u>SE/E</u>					Firm					Firm					Project					Received in good condition										
Date/Time <u>12-7-88 15:34</u>					Date/Time					Date/Time					Special Instructions/Comments					LAB NO.										
Received By <u>FRAN HARRIS</u>					Received By					Received By					SPECIAL INSTRUCTIONS/COMMENTS <u>Priority Pollutant metals - (Unfiltered - Total)</u>															
Signature <u>FRAN HARRIS</u>					Signature					Signature																				
Printed Name <u>FRAN HARRIS</u>					Printed Name					Printed Name																				
Firm <u>CAS</u>					Firm					Firm																				
Date/Time <u>12/7/88 15:34</u>					Date/Time					Date/Time																				

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

2-E/E 400-05

CRAW00017787



Chain of Custody / Laboratory Analysis Request

DATE Dec 9, 1988 PAGE 1 OF 1

PROJECT GRAYCO/ST. Johns			#T&R: 01			ANALYSIS REQUESTED	GENERAL CHEMISTRY (Specify)										OTHER (Specify)	NUMBER OF CONTAINERS							
CLIENT INFO. CONTACT STEVE HENSHAW			ADDRESS 4240 7504 Bridgeport Rd, Portman OR			TELEPHONE (503) 624-7200			SAMPLERS NAME S. R. Henshaw			PHONE			SAMPLERS SIGNATURE SR Henshaw										
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID OREAN.	GC/MS/825/8270	VOLATILE ORGANICS GC/MS/824/8240	HALOGENATED VOLATILE ORGANICS 801/8010	PHENOLICS 804/8040	POLYNUCLEAR AROMATIC 819/8310	TOTAL ORGANIC CARBON (TOC) 415/8080	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TOCP METALS (Chen One)	METALS (TOTAL) (See Special Inst.)	TECP ORGANICS	pH, COND ALK	Hg/As, Cd, SO ₄	Cu, Mg, Na, K	PCB	Priorit. pol. metals	TOX	624, 625	PAHs	Pentachlorophenol	
1. SE/E-6	12/17			Water															X	X		X	X	X	6
2. SE/E-7	12/17																		X	X	X		X	X	5
3. SE/E-8	12/17																		X	X	X		X	X	5
4. SE/E-9	12/18																		X	X	X		X	X	5
5. SE/E-10	12/18																		X	X	X		X	X	5
6. SE/E-11	12/18																		X	X	X		X	X	5
7.																									
8.																									

Relinquished By Steve, Edwards & Assoc. SR Henshaw		Relinquished By Steven SE/E 7		Relinquished By		PROJECT INFORMATION		SAMPLE RECEIPT	
Signature	SR Henshaw	Signature	STEVE STEINEN	Signature		Shipping I.D. No.		Total No. of Containers	
Printed Name	SE/E	Printed Name	SE/E	Printed Name		Via		Chain of Custody Seals	
Firm	12/19/88 0930	Firm	12-9-88 1952	Firm		Project		Received in good condition	
Date/Time		Date/Time		Date/Time				LAB NO.	
Received By Steven N. Steinen		Received By Colin Elliott		Received By		SPECIAL INSTRUCTIONS/COMMENTS			
Signature	STEVEN N. STEINEN	Signature	Colin Elliott	Signature		Please filter metals samples			
Printed Name	SE/E	Printed Name	CAS	Printed Name					
Firm	12/19/88 0930	Firm	12/19/88 7:55	Firm					
Date/Time		Date/Time		Date/Time					

CRAW00017788

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody, Laboratory Analysis Request

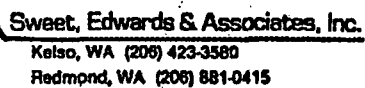
DATE Dec 9, 1988 PAGE 1 OF 1

PROJECT <u>GRAYCO/ST. Johns</u> # <u>T8701.01</u> CLIENT INFO, CONTACT <u>STEVE HENSHAW</u> ADDRESS <u>7504 Bridgeport Rd, Port Harb, OR 9722</u> TELEPHONE <u>(503) 624-7200</u> SAMPLERS NAME <u>S. R. HENSHAW</u> PHONE _____ SAMPLERS SIGNATURE <u>SR Henshaw</u>					ANALYSIS REQUESTED <table border="1" style="width: 100%; border-collapse: collapse; font-size: 0.8em;"> <tr> <td style="width: 10%;">BASE/NEU/ACID ORGAN.</td> <td style="width: 10%;">GC/MS/825/827D</td> <td style="width: 10%;">VOLATILE ORGANICS</td> <td style="width: 10%;">GC/MS/824/8240</td> <td style="width: 10%;">HALOGENATED VOLATILE ORGANICS</td> <td style="width: 10%;">GC/MS/801/8010</td> <td style="width: 10%;">PHENOLICS</td> <td style="width: 10%;">GC/MS/8040</td> <td style="width: 10%;">POLYNUCLEAR AROMATIC</td> <td style="width: 10%;">GC/MS/8310</td> <td style="width: 10%;">TOTAL ORGANIC CARBON (TOC)</td> <td style="width: 10%;">GC/MS/9060</td> <td style="width: 10%;">TOTAL ORGANIC HALIDE (TOX)</td> <td style="width: 10%;">GC/MS/9020</td> <td style="width: 10%;">EP TOX/TCLP METALS (Chem One)</td> <td style="width: 10%;">METALS (TOTAL) (See Special Inst.)</td> <td style="width: 10%;">TCLP ORGANICS</td> <td style="width: 10%;">PH. COND ALK</td> <td style="width: 10%;">H₂O₂/SO₄ Cl</td> <td style="width: 10%;">Ca. Mg. Na. K</td> <td style="width: 10%;">PCB's</td> <td style="width: 10%;">TOX</td> <td style="width: 10%;">OIL/Grease</td> <td style="width: 10%;">OTHER (Specify)</td> <td rowspan="2" style="width: 10%; text-align: center; vertical-align: middle;">NUMBER OF CONTAINERS</td> </tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> </table>															BASE/NEU/ACID ORGAN.	GC/MS/825/827D	VOLATILE ORGANICS	GC/MS/824/8240	HALOGENATED VOLATILE ORGANICS	GC/MS/801/8010	PHENOLICS	GC/MS/8040	POLYNUCLEAR AROMATIC	GC/MS/8310	TOTAL ORGANIC CARBON (TOC)	GC/MS/9060	TOTAL ORGANIC HALIDE (TOX)	GC/MS/9020	EP TOX/TCLP METALS (Chem One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	PH. COND ALK	H ₂ O ₂ /SO ₄ Cl	Ca. Mg. Na. K	PCB's	TOX	OIL/Grease	OTHER (Specify)	NUMBER OF CONTAINERS																								
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 20%;">SAMPLE I.D.</th> <th style="width: 15%;">DATE</th> <th style="width: 15%;">TIME</th> <th style="width: 20%;">LAB I.D.</th> <th style="width: 30%;">TYPE</th> </tr> <tr> <td>1. SE/E-6-20</td> <td>12/7</td> <td></td> <td></td> <td>Soil</td> </tr> <tr> <td>2. SE/E-7-10</td> <td>12/7</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. SE/E-8-20</td> <td>12/7</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. SE/E-9-15</td> <td>12/8</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. SE/E-10-25</td> <td>12/8</td> <td></td> <td></td> <td></td> </tr> <tr> <td>6. SE/E-11-15</td> <td>12/8</td> <td></td> <td></td> <td></td> </tr> <tr> <td>7.</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>8.</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>					SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	1. SE/E-6-20	12/7			Soil	2. SE/E-7-10	12/7				3. SE/E-8-20	12/7				4. SE/E-9-15	12/8				5. SE/E-10-25	12/8				6. SE/E-11-15	12/8				7.					8.					<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> Requisitioned By <u>Steve Stinton</u> Signature <u>STEVE STINTON</u> Printed Name <u>STEVE STINTON</u> Firm <u>SE/E</u> Date/Time <u>12-9-88 1952</u> </td> <td style="width: 50%;"> Requisitioned By _____ Signature _____ Printed Name _____ Firm _____ Date/Time _____ </td> </tr> <tr> <td> Requisitioned By <u>Steven N. Stinton</u> Signature <u>STEVEN N. STINTON</u> Printed Name <u>SE/E</u> Firm <u>12/9/88 0970</u> </td> <td> Requisitioned By _____ Signature _____ Printed Name _____ Firm _____ Date/Time _____ </td> </tr> </table>															Requisitioned By <u>Steve Stinton</u> Signature <u>STEVE STINTON</u> Printed Name <u>STEVE STINTON</u> Firm <u>SE/E</u> Date/Time <u>12-9-88 1952</u>	Requisitioned By _____ Signature _____ Printed Name _____ Firm _____ Date/Time _____	Requisitioned By <u>Steven N. Stinton</u> Signature <u>STEVEN N. STINTON</u> Printed Name <u>SE/E</u> Firm <u>12/9/88 0970</u>	Requisitioned By _____ Signature _____ Printed Name _____ Firm _____ Date/Time _____
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE																																																																
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Requisitioned By <u>Steven N. Stinton</u> Signature <u>STEVEN N. STINTON</u> Printed Name <u>SE/E</u> Firm <u>12/9/88 0970</u>	Requisitioned By _____ Signature _____ Printed Name _____ Firm _____ Date/Time _____																																																																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> Requisitioned By <u>Steven N. Stinton</u> Signature <u>STEVEN N. STINTON</u> Printed Name <u>SE/E</u> Firm <u>12/9/88</u> </td> <td style="width: 50%;"> Requisitioned By <u>Colin Elliott</u> Signature <u>Colin Elliott</u> Printed Name <u>CAS</u> Firm <u>12/7/88 7:55pm</u> </td> </tr> <tr> <td> Requisitioned By _____ Signature _____ Printed Name _____ Firm _____ Date/Time _____ </td> <td> Requisitioned By _____ Signature _____ Printed Name _____ Firm _____ Date/Time _____ </td> </tr> </table>					Requisitioned By <u>Steven N. Stinton</u> Signature <u>STEVEN N. STINTON</u> Printed Name <u>SE/E</u> Firm <u>12/9/88</u>	Requisitioned By <u>Colin Elliott</u> Signature <u>Colin Elliott</u> Printed Name <u>CAS</u> Firm <u>12/7/88 7:55pm</u>	Requisitioned By _____ Signature _____ Printed Name _____ Firm _____ Date/Time _____	Requisitioned By _____ Signature _____ Printed Name _____ Firm _____ Date/Time _____	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> PROJECT INFORMATION Shipping I.D. No. _____ VIA _____ Project _____ </td> <td style="width: 50%;"> SAMPLE RECEIPT Total No. of Containers <u>6</u> Chain of Custody Seal _____ Received in good condition _____ LAB NO. _____ </td> </tr> <tr> <td colspan="2" style="height: 100px; vertical-align: top;"> SPECIAL INSTRUCTIONS/COMMENTS </td> </tr> </table>															PROJECT INFORMATION Shipping I.D. No. _____ VIA _____ Project _____	SAMPLE RECEIPT Total No. of Containers <u>6</u> Chain of Custody Seal _____ Received in good condition _____ LAB NO. _____	SPECIAL INSTRUCTIONS/COMMENTS																																										
Requisitioned By <u>Steven N. Stinton</u> Signature <u>STEVEN N. STINTON</u> Printed Name <u>SE/E</u> Firm <u>12/9/88</u>	Requisitioned By <u>Colin Elliott</u> Signature <u>Colin Elliott</u> Printed Name <u>CAS</u> Firm <u>12/7/88 7:55pm</u>																																																																			
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DISTRIBUTION: WHITE - return to originator; YELLOW - sub; PINK - retained by originator.

SEA-400-05

CRAW00017789



Chain of Custody/ Laboratory Analysis Request

DATE December 14, 1946 PAGE 1 OF 1

PROJECT ST. JAMES / GRAYCO # TRC101 CLIENT INFO CONTACT STEVE HENSHAW ADDRESS 7504 BRIDGEPORT RD. TELEPHONE (503) 621-7200 PORTLAND, OR 97224 SAMPLERS NAME ST Henshaw PHONE SAMPLERS SIGNATURE S. R. HENSHAW					ANALYSIS REQUESTED BASE/NEUTRAL ORGANIC GC/MS 825/8270 VOLATILE ORGANICS GC/MS 824/8240 HALOGENATED VOLATILE ORGANICS 901/9010 PHENOLICS 504/1040 POLYNUCLEAR AROMATIC 610/8310 TOTAL ORGANIC CARBON (TOC) 415/9040 TOTAL ORGANIC HALIDE (TOX) 9020 EP TOX/TCLP METALS (State Dept) METALS (TOTAL) (See Special Inst.) TCLP ORGANICS PH. COND ALK NO ₃ /NO ₂ -N SO ₄ Ca, Mg, Na, K PCB's TOX oil + grease															OTHER (Specify)	NUMBER OF CONTAINERS																																													
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>SAMPLE I.D.</th> <th>DATE</th> <th>TIME</th> <th>LAB I.D.</th> <th>TYPE</th> </tr> </thead> <tbody> <tr> <td>1. SE 16-12-10</td> <td>12/19</td> <td></td> <td></td> <td>Soil</td> </tr> <tr> <td>2. SE 16-12-15</td> <td>12/19</td> <td></td> <td></td> <td>Soil</td> </tr> <tr><td>3.</td><td></td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td><td></td></tr> <tr><td>6.</td><td></td><td></td><td></td><td></td></tr> <tr><td>7.</td><td></td><td></td><td></td><td></td></tr> <tr><td>8.</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>					SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	1. SE 16-12-10	12/19			Soil	2. SE 16-12-15	12/19			Soil	3.					4.					5.					6.					7.					8.																					
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE																																																														
1. SE 16-12-10	12/19			Soil																																																														
2. SE 16-12-15	12/19			Soil																																																														
3.																																																																		
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7.																																																																		
8.																																																																		
Relinquished By [Signature] Signature S. R. HENSHAW Printed Name SE 16 Firm 12/10/88 7:50pm Date/Time					Relinquished By Signature Printed Name Firm Date/Time					Relinquished By Signature Printed Name Firm Date/Time					PROJECT INFORMATION Shipping I.D. No. TA Project					SAMPLE RECEIPT Total No. of Containers Chain of Custody Data Received in good condition LAB NO.					SPECIAL INSTRUCTIONS/COMMENTS																																									
Received By [Signature] Signature Dave E. [Signature] Printed Name CAS Firm 12/10/88 7:50pm Date/Time					Received By Signature Printed Name Firm Date/Time					Received By Signature Printed Name Firm Date/Time																																																								

DISTRIBUTION: WHITE - return to originator; YELLOW - info; PINK - retained by originator.

SEA-400-05

CRAW00017790



Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Laboratory Analysis Request

DATE DECEMBER 1988 PAGE 1 OF 1

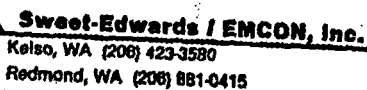
PROJECT <u>TR701-01 GRAYC 1ST TENDERS</u>					ANALYSIS REQUESTED															GENERAL CHEMISTRY (Specify)					OTHER (Specify)		NUMBER OF CONTAINERS
CLIENT INFO. CONTACT <u>STEVE HENSHAW</u> ADDRESS <u>7504 BRIDGEPORT RD.</u> TELEPHONE (503) <u>624-7200</u> <u>Redmond, OR 97124</u> SAMPLERS NAME <u>S.P. HENSHAW</u> PHONE SAMPLERS SIGNATURE <u>S.P. HENSHAW</u>					BASE/NEUTRAL/ACID ORGAM.	GC/MS/605/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS GC/MS/607/8010	PHENOLICS GC/MS/604/8040	POLYNUCLEAR AROMATIC GC/MS/610/8310	TOTAL ORGANIC CARBON (TOC) 415/9050	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	PH, CONDUCT, ALK	NO ₂ /NO ₃ , Cl, SO ₄	Ca, Mg, Na, K	TOX	PCB's	priority pol. ar. h's	Polynuclear aromatic h's	PAH's				
1. <u>SEK-12</u>	<u>12/9</u>			<u>WATER</u>														<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>					
2. <u>SEK-1213</u>	<u>12/9</u>																	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>					
3.																											
4.																											
5.																											
6.																											
7.																											
8.																											

Refiniquished By <u>Sweet Edwards & Assoc.</u>		Refiniquished By		PROJECT INFORMATION		SAMPLE RECEIPT	
Signature <u>S.P. HENSHAW</u>	Signature	Signature		Shipping I.D. No.	Total No. of Containers		
Printed Name <u>SEK</u>	Printed Name	Printed Name		VIA	Chain of Custody Seal		
Firm <u>12/10/88 9:50 PM</u>	Firm	Firm		Project	Received in good condition		
Date/Time	Date/Time	Date/Time			LAB NO.		
Received By <u>DAVE ENZELMAN</u>	Received By	Received By		SPECIAL INSTRUCTIONS/COMMENTS			
Signature <u>DAVE ENZELMAN</u>	Signature	Signature					
Printed Name <u>CAS</u>	Printed Name	Printed Name					
Firm <u>1/10/89 4:50</u>	Firm	Firm					
Date/Time	Date/Time	Date/Time					

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

CRAW00017791



Winnipeg, 20th July, 1914.

DATE 12/15/88 PAGE 1 OF 1

DISTRIBUTION: WHITE - return to originator; YELLOW - info; PINK - retained by originator

S-E/E 400-08

CRAW00017792



Sweet-Edwards / EMCON, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Laboratory Analysis Request

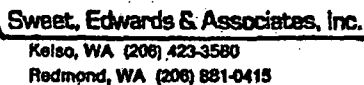
DATE 1/27/89 PAGE 1 OF 2

PROJECT <u>GRAYCO</u> <u>1 TB701.01</u>				ANALYSIS REQUESTED															GENERAL CHEMISTRY (Specify)					OTHER (Specify)		NUMBER OF CONTAINERS	
CLIENT INFO. CONTACT <u>KENT MATTHEW</u> ADDRESS <u>Portland</u> TELEPHONE <u>503 624 7200</u> SAMPLERS NAME <u>STU RYMAN</u> PHONE <u>624 7200</u> SAMPLERS SIGNATURE <u>[Signature]</u>				<input type="checkbox"/> BASE/NEUTRAL/ACID ORGANIC <input type="checkbox"/> VOLATILE ORGANICS <input type="checkbox"/> HALOGENATED VOLATILE ORGANICS <input type="checkbox"/> PHTHALATES <input type="checkbox"/> POLYNUCLEAR AROMATIC <input type="checkbox"/> TOTAL ORGANIC CARBON <input type="checkbox"/> TOTAL ORGANIC HALIDE <input type="checkbox"/> EP TOX/TCLP METALS <input type="checkbox"/> METALS (TOTAL) <input type="checkbox"/> TCLP ORGANICS <input type="checkbox"/> pH, COND, ALK, SO ₄ , NO ₃ /NO ₂ , Cl, Ca, Mg, Na, K <input checked="" type="checkbox"/> PCB in Soil <input checked="" type="checkbox"/> PCB in Air <input checked="" type="checkbox"/> METALS <input checked="" type="checkbox"/> EPA 601 (SW-846) <input checked="" type="checkbox"/> EPA 608 <input checked="" type="checkbox"/> TCEPH																							
SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE																							
1. SE/E 14	1/26	AM		Soil																							1
2. SE/E 14 HF	1/26	AM	unfilled	H ₂ O																							1
3. SE/E 14 F	1/26	AM		H ₂ O																							1
4. SE/E 15	1/26	PM		Soil																							
5. SE/E 15 26-215	1/26	AM		Soil																							2
6. SE/E 15 16-185	1/26	AM		Soil																							2
7. SE/E 17	1/26	PM		unfilled																							2
8. SE/E 17 F	1/26	PM		unfilled																							2
Requested By <u>[Signature]</u>				Requested By				Requested By				PROJECT INFORMATION				SAMPLE RECEIPT											
Signature <u>STUART RYMAN</u>				Signature				Signature				Shipping I.D. No.				Total No. of Containers											
Printed Name <u>STU RYMAN</u>				Printed Name				Printed Name				VIA				Chain of Custody Seal											
Firm <u>1/27/89 1530</u>				Firm				Firm				Project				Received in good condition											
Date/Time				Date/Time				Date/Time				Project				LAB NO.											
Received By <u>[Signature]</u>				Received By				Received By				SPECIAL INSTRUCTIONS/COMMENTS <u>CALL FOR INSTRUCTIONS ON METALS ANALYSIS -</u>															
Signature <u>FRANK LAMU</u>				Signature				Signature																			
Printed Name <u>FRANK LAMU</u>				Printed Name				Printed Name																			
Firm <u>1/29/89 3:30</u>				Firm				Firm																			
Date/Time				Date/Time				Date/Time																			

DESTROYING: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

S-E/E 400-05

CRAW00017793



Chain of Custody/ Laboratory Analysis Request

DATE 1-11-88 PAGE 1 OF 1

PROJECT <u>Gradyco</u> CLIENT INFO. CONTACT <u>Steve Henshaw</u> ADDRESS TELEPHONE <u>Rob Dixon</u> SAMPLERS NAME <u>Lynn Simpson</u> PHONES SAMPLERS SIGNATURE					ANALYSIS REQUESTED <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> BASE/NEUT/ACID ORGAN. 607/MS/BS/TS/ET/TO VOLATILE ORGANICS 607/MS/BS/TS/ET/TO HALOGENATED VOLATILE ORGANICS 607/MS/BS/TS/ET/TO PHENOLICS 604/MS/BS/TS/ET/TO POLYNUCLEAR AROMATIC 610/MS/BS/TS/ET/TO TOTAL ORGANIC CARBON (TOC) 615/MS/BS/TS/ET/TO TOTAL ORGANIC HALIDE (TOX) 9020 SP TOX/TC/CP METALS (Crack One) METALS (TOTAL) (See Special Inst.) TECP ORGANICS PbL CORB ALX NO₂/NO₃/Cl SO₂ Ca, Mg, Na, K PCBs </div> <div style="width: 30%; text-align: center;"> GENERAL CHEMISTRY (Specify) </div> <div style="width: 30%; text-align: center;"> OTHER (Specify) </div> </div>															NUMBER OF CONTAINERS																																																																																										
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DISTRIBUTION: WHITE - return to originator; YELLOW - info; PINK - retained by originator

SEA-400-00

CRAW00017794



Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Laboratory Analysis Request

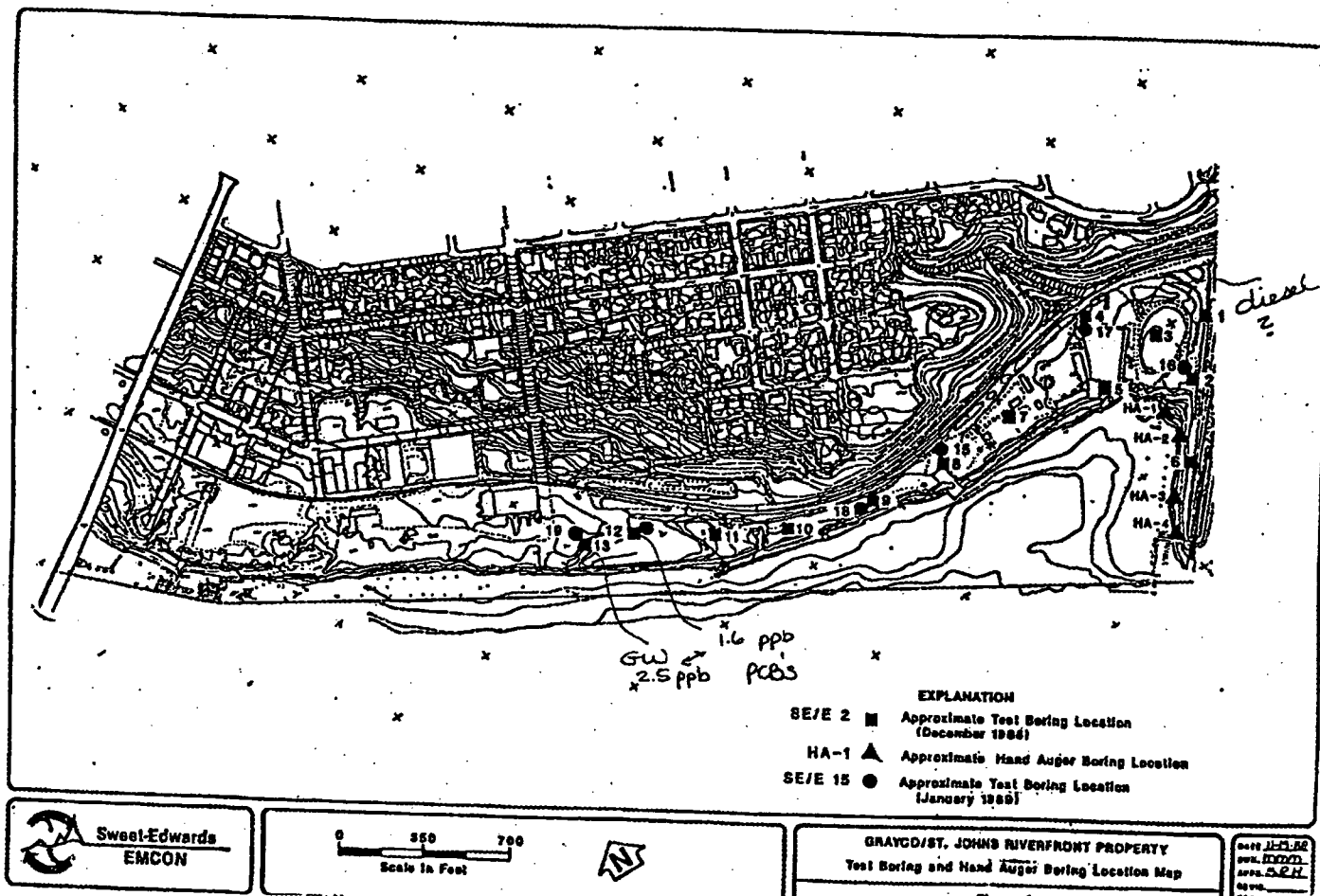
DATE 1/27/89 PAGE 2 OF 2

PROJECT <u>GRAYCO</u> <u>18701.01</u>					ANALYSIS REQUESTED															GENERAL CHEMISTRY (Specify)										OTHER (Specify)					NUMBER OF CONTAINERS
CLIENT INFO. CONTACT <u>Kent Mathias</u> ADDRESS <u>PDX</u> TELEPHONE <u>624 7200</u> SAMPLERS NAME <u>STU Rogers</u> PHONE <u>624 7200</u> SAMPLERS SIGNATURE <u>STU Rogers</u>					BASE/NEU/ACID ORGAN. GC/MS/825/8270	VOLATILE ORGANICS GC/MS/824/8240	HALOGENATED VOLATILE ORGANICS GC/MS/825	PHENOLICS GC/MS/824	POLYNUCLEAR AROMATIC 810/8310	TOTAL ORGANIC CARBON (TOC) 415/5060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Chrom One)	HEAVY METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	PH. COND	ALK	NO ₃ /NO ₂ , Cl	SO ₄	Ca, Mg, Na, K	PCB Soil	PCB WATER	MOMMS @ PH	EPA 601 (LEAD)	EPA 608	TRPH										
1. SE/E 17 UF	1/26	PM		WATER																	X				2										
2. SE/E 18 25.0	1/27	PM		Soil																					2										
3. SE/E 18	1/27	PM		WATER																					3										
4. SE/E 19 36.5	1/27	PM		Soil																	X		X		1										
5. SE/E 18	1/27	PM		WATER																	X				2										
6. SE/E 17 U	1/27	PM		WATER																					2										
7. SE/E 19 F	1/27	PM		WATER																	X				2										
8. RIVER WATER	1/27	PM		WATER																			X		1										
Relinquished By <u>STU Rogers</u> Signature <u>STU Rogers</u> Printed Name <u>STU Rogers</u> Firm <u>SE/E</u> Date/Time <u>1/27/89 1:30</u>					Relinquished By Signature Printed Name Firm Date/Time					PROJECT INFORMATION Shipping I.D. No. Via Project					SAMPLE RECEIPT Total No. of Containers Chain of Custody Seal Received in good condition LAB USE																				
Received By <u>Paul Allen</u> Signature <u>Paul Allen</u> Printed Name <u>Paul Allen</u> Firm <u>1/29/89 3:30</u> Date/Time					Received By Signature Printed Name Firm Date/Time					SPECIAL INSTRUCTIONS/COMMENTS Call for INSTRUCTIONS ON "Hold" samples AND ON MOMMS ANALYSIS Client requests we disposed of SE/E 18 25.0 Soil SE/E 18 WATER AS per K. Mathias 1/24/89																									

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

8-E/E 400-05

CRAW00017795



CRAW00017796

APPENDIX C

POLK DIRECTORY/OCCUPANT LIST

GRAYCO-R.315 LK
T8701.01

Rev. 1 3/15/89

CRAW00017797

City Directories

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1985	7823 N Bradford	Residence
1985	7611 N Crawford	Residence
1985	7617 N Crawford	Residence
1985	7623 N Crawford	Residence
1985	7645 N Crawford	Residence
1985	7654 N Crawford	Residence
1985	6900 N Edgewater	McCormick & Baxter Creosoting McCormick Piling & Lumber Co -piles and piling
1985	6905 N Edgewater	Vacant
1985	6910 N Edgewater	Residence
1985	6720 N Oswego	Residence
1985	6507 N Richmond	Vacant
1985	6620 N Richmond	Jones Automotives
1985	6636 N Richmond	Residence
1985	6612 N VanBuren	Residence
1985	6623 N VanBuren	Residence

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1980	7823 N Bradford	Residence
1980	7611 N Crawford	Residence
1980	7617 N Crawford	Residence
1980	7623 N Crawford	Residence
1980	7645 N Crawford	Residence
1980	7654 N Crawford	Residence
1980	6900 N Edgewater	McCormick & Baxter Creosoting McCormick Piling & Lumber Co -piles and piling
1980	6905 N Edgewater	Vacant
1980	6910 N Edgewater	Residence
1980	---- N Oswego	None Found
1980	6507 N Richmond	Energy Guard Corp -insulation mfrs
1980	6636 N Richmond	Residence

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1980	6612 N VanBuren	Residence
1980	6623 N VanBuren	Residence

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1975	7823 N Bradford	Residence
1975	7611 N Crawford	Residence
1975	7617 N Crawford	Residence
1975	7623 N Crawford	Residence
1975	7645 N Crawford	Residence
1975	7654 N Crawford	Residence

1975	6900 N Edgewater	McCormick & Baxter Creosoting McCormick Piling & Lumber Co -piles and piling
------	------------------	--

1975	----- N Oswego	None Found
------	----------------	------------

1975	6507 N Richmond	Vacant
1975	6636 N Richmond	Residence

1975	6612 N VanBuren	Residence
1975	6623 N VanBuren	Residence

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1970	----- N Bradford	None Found
1970	7611 N Crawford	Residence
1970	7617 N Crawford	Residence
1970	7623 N Crawford	Residence
1970	7645 N Crawford	Residence
1970	7654 N Crawford	Residence

1970	6900 N Edgewater	McCormick & Baxter Creosoting McCormick Piling & Lumber Co -piles and piling
------	------------------	--

1970	----- N Oswego	None Found
------	----------------	------------

1970	6507 N Richmond	Oregon Woodwork Ltd -window & door mfg
------	-----------------	---

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1970	6605 N Richmond	Engel Roland Welding Co.
1970	6636 N Richmond	Residence
1970	6637 N Richmond	Residence
1970	6730 N Richmond	Residence
1970	6815 N Richmond	Click Chemical & Sanitation Supplies
		Easy Clean Chemical Co Soap Mfrs

1970	6623 N VanBuren	Residence
------	-----------------	-----------

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1965	---- N Bradford	None Found
1965	7611 N Crawford	Residence
1965	7617 N Crawford	Residence
1965	7623 N Crawford	Residence
1965	7645 N Crawford	Residence
1965	7654 N Crawford	Residence
1965	6900 N Edgewater	McCormick & Baxter Creosoting McCormick Piling & Lumber Co -piles and piling
1965	---- N Oswego	None Found
1965	6507 N Richmond	Vacant
1965	6637 N Richmond	Residence
1965	6623 N VanBuren	Residence

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1960	---- N Bradford	None Found
1960	7645 N Crawford	Residence
1960	7654 N Crawford	Residence
1960	6900 N Edgewater	McCormick & Baxter Creosoting McCormick Piling & Lumber Co -piles and piling
1960	7208 N Edgewater	Western Homes Inc. -prefabricated homes

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1960	---- N Oswego	None Found
1960	6507 N Richmond	Simpson Logging Co. Portland Plylock Div -veneer mfrs
1960	6636 N Richmond	Residence
1960	6637 N Richmond	Residence
1960	6623 N VanBuren	Vacant

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1955	---- N Bradford	None Found
1955	7625 N Crawford	Residence
1955	7645 N Crawford	Residence
1955	7654 N Crawford	Residence
1955	6900 N Edgewater	McCormick & Baxter Creosoting
1955	7216 N Edgewater	Vacant
1955	---- N Oswego	None Found
1955	6507 N Richmond	Plylock Corp. -veneer mfrs
1955	6636 N Richmond	Residence
1955	6637 N Richmond	Residence
1955	6623 N VanBuren	Residence

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1950	---- N Bradford	None Found
1950	7625 N Crawford	Residence
1950	7645 N Crawford	Residence
1950	7654 N Crawford	Residence
1950	6900 N Edgewater	McCormick & Baxter Creosoting
1950	7216 N Edgewater	Vacant
1950	6603 N Oswego	Kitchen Sup of Ore whs

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1950	6449 N Richmond	Portland Woolen Mills
1950	6507 N Richmond	Plylock Corp. -veneer mfrs Portland Mfg Co.
1950	6636 N Richmond	Residence
1950	6637 N Richmond	Residence
1950	6623 N VanBuren	Residence

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1943-44	---- N Bradford	None Found
1943-44	7619 N Crawford	Vacant
1943-44	7625 N Crawford	Residence
1943-44	7654 N Crawford	Residence
1943-44	7216 N Edgewater	Vacant Ft Western Cooperage Co. -mill Dry Dock of Ptld

1943-44	---- N Oswego	None Found
1943-44	6417 N Richmond	Star Sand Co.
1943-44	6447 N Richmond	Purdy Brush Co. mfrs
1943-44	6449 N Richmond	Portland Woolen Mills
1943-44	6507 N Richmond	Plylock Corp. -veneer mfrs Portland Mfg Co.
1943-44	6636 N Richmond	Residence
1943-44	6637 N Richmond	Sandys Cafeteria
1943-44	6623 N VanBuren	Residence

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1940	---- N Bradford	None Found
1940	7619-7625 N Crawford	Vacant
1940	7654 N Crawford	Residence
1940	7216 N Edgewater	Edgewater Lunch Ft Western Cooperage Co. -mill Dry Dock of Ptld
1940	---- N Oswego	None Found

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1940	6417 N Richmond	Star Sand Co.
1940	6447 N Richmond	Purdy Brush Co. mfrs
		Portland Woolen Mills
1940	6449 N Richmond	Residence
1940	6507 N Richmond	Plylock Corp. -veneer mfrs
		Portland Mfg Co.
1940	6636 N Richmond	Residence
1940	6637 N Richmond	Residence
1940	6623 N VanBuren	Residence

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1936	---- N Bradford	None Found
1936	7625 N Crawford	Residence
1936	7654 N Crawford	Residence
1936	---- N Edgewater	Ft Western Cooperage Co. -mill Dry Dock of Ptid
1936	---- N Oswego	None Found
1936	6417 N Richmond	Star Sand Co.
1936	6447 N Richmond	Purdy Brush Co. mfrs
		Portland Woolen Mills
1936	6449 N Richmond	Residence
1936	6507 N Richmond	Plylock Corp. -veneer mfrs
		Portland Mfg Co.
1936	6636 N Richmond	Residence
1936	6637 N Richmond	Residence
1936	6623 N VanBuren	Residence

KEY TO ADDRESS CONVERSIONS

Address conversions occurred in 1931, the changes were as follows:

N. Bradford

N. Oswego

<u>New</u>	<u>Old</u>
------------	------------

8630	27
8643	34
8806	219

N. Crawford

<u>New</u>	<u>Old</u>
------------	------------

7654	903
7706	901
7904	713

N. Edgewater

<u>New</u>	<u>Old</u>
------------	------------

none listed

<u>New</u>	<u>Old</u>
------------	------------

6603	810 N Crawford
6714	711
6720	709

N. Richmond

<u>New</u>	<u>Old</u>
------------	------------

6447	922
6449	916
6507	918
6721	708
6636	801
6730	705

N. VanBuren

<u>New</u>	<u>Old</u>
------------	------------

6623	808
------	-----

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1920	----- N Bradford	None Found
1920	----- N Crawford	None Found
1920	----- N Edgewater	None Found
1920	----- N Oswego	None Found
1920	----- N Richmond	None Found
1920	----- N VanBuren	None Found

<u>Year</u>	<u>Address</u>	<u>Occupant</u>
1910	----- N Bradford	None Found
1910	----- N Crawford	None Found
1910	----- N Edgewater	None Found
1910	----- N Oswego	None Found
1910	----- N Richmond	None Found
1910	----- N VanBuren	None Found

APPENDIX D

BORING LOGS

GRAYCO-R.315 LK
T8701.01

Rev. 1 3/15/89

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-1
 PAGE 1 OF 1
 REFERENCE ELEV. ±
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/5/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN F.T.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	75	5-7-7 (14)		5				0-23' Poorly graded SAND, brown, medium to coarse grained, trace silt, moist (SP).
S-2	65	5-6-6 (12)		10				
S-3	70	1-5-8 (13)		15				
S-4	75	7-11-11 (22)		20				
			23.0'	25				--- first encountered water at 23 feet. 23-30' Poorly graded SAND, black gray, medium to coarse grained, trace silt, moist (SP).
				30				Bottom of boring at 30 feet.
				35				

REMARKS

Sampled ground water directly through auger with teflon bailer. No obvious signs of contamination in soil or ground water samples. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.



SWEET-EDWARDS/ENCON

78701.01.GRAYC.JLG.122888

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-2
 PAGE 1 OF 1
 REFERENCE ELEV. 4
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/5/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
								0-5' Humus in SAND matrix, black, poorly graded fine grain sand, moist (PT/SP).
S-1	15	1-1-1 (2)		5				5-23' Poorly graded SAND, brown, medium to coarse grained, trace silt, moist (SP).
S-2	10	1-2-1 (3)		10				
S-3	80	2-2-5 (7)		15				
S-4	80	4-4-4 (8)		20				
				23.0'				--- first encountered water at 23 feet 23-30' Poorly graded SAND, black gray, medium to coarse grained, trace silt, moist (SP).
				30				Bottom of boring at 30 feet.
				35				

REMARKS

Sampled ground water directly through auger with teflon bailer. No obvious signs of contamination in soil or ground water samples. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.



SNELTER-EDWARDS/EMCON

78701.01.GRAYC.JLG.22888

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-3
 PAGE 1 OF 1
 REFERENCE ELEV. 14
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/6/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	85	7-9-8 (17)		5				0-23.5' Poorly graded SAND, brown, medium to coarse grained, trace silt, moist (SP).
S-2	85	6-6-7 (13)		10				
S-3	80	5-7-8 (15)		15				
S-4	90	7-9-11 (20)		20				
				23.5'				--- first encountered water at 23.5 feet.
				25				23.5-30' Poorly graded SAND, black gray, medium to coarse grained, trace silt, moist (SP).
				30				Bottom of boring at 30 feet.
				35				

REMARKS

Sampled ground water directly through auger with teflon bailer. No obvious signs of contamination in soil or ground water samples. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.



SWEET-EDWARDS/EMCON

78701.01.GRAYC.JLG.122888

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-4
 PAGE 1 OF 1
 REFERENCE ELEV. 12
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/6/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (IN COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	90	4-4-4 (8)		5				0-23.5' Poorly graded SAND, brown, medium to coarse grained, trace silt, moist (SP).
S-2	85	4-6-4 (10)		10				
S-3	90	5-5-6 (11)		15				
S-4	85	3-5-6 (11)		20				
				23.5				--- first encountered water at 23.5 feet.
				25				23.5-30' Poorly graded SAND, black gray, medium to coarse grained, trace silt, moist (SP).
				30				Bottom of boring at 30 feet.
				35				

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. No obvious soil or ground water contamination. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.



SWEET-EDWARDS/ENCON

TEST 01, GRAYCO, FIG. 122888

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-3
 PAGE 1 OF 1
 REFERENCE ELEV. 4
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/6/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (IN COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	85	7-9-8 (17)		5				0-23.5' Poorly graded SAND, brown, medium to coarse grained, trace silt, moist (SP).
S-2	85	6-6-7 (13)		10				
S-3	80	5-7-8 (15)		15				
S-4	90	7-9-11 (20)		20				
				23.5'				--- first encountered water at 23.5 feet.
				25				23.5-30' Poorly graded SAND, black gray, medium to coarse grained, trace silt, moist (SP).
				30				Bottom of boring at 30 feet.
				35				

REMARKS

Sampled ground water directly through auger with teflon bailer. No obvious signs of contamination in soil or ground water samples. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.



SWEET-EDWARDS/EMCON

T8701.01.GRAYC.JLG.122888

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-4
 PAGE 1 OF 1
 REFERENCE ELEV. \pm
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/6/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (IN CORP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	90	4-4-4 (8)		5				0-23.5' Poorly graded SAND, brown, medium to coarse grained, trace silt, moist (SP).
S-2	85	4-6-4 (10)		10				
S-3	90	5-5-6 (11)		15				
S-4	85	3-5-6 (11)		20				
				23.5'				--- first encountered water at 23.5 feet.
				25				23.5-30' Poorly graded SAND, black gray, medium to coarse grained, trace silt, moist (SP).
				30				Bottom of boring at 30 feet.
				35				

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. No obvious soil or ground water contamination. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.



SWEET-EDWARDS/ENCON

7701.01.GRAYC..76.122888

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-5
 PAGE 1 OF 1
 REFERENCE ELEV. 44
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/6/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	80	4-5-8 (13)		5				0-20' Poorly graded SAND, brown, medium to coarse grained, trace of silt, moist (SP)
S-2	85	3-3-4 (7)		10				
S-3	90	3-5-7 (12)		15				
S-4	85	5-6-8 (14)		20				20-20.33' Silty CLAY lens, light brown, moderate plasticity, moist (CL)
				23.0'				20.33-30' Poorly graded SAND, reddish-brown, medium to coarse, minor silt, moist (SP) --- Black wood slivers from 21'-2" to 21'-4".
				25				21.5-23' Poorly graded SAND, brown, medium to coarse grained, trace silt, moist (SP) --- first encountered water and color change to black-gray at 23 feet.
				30				Bottom of Boring at 30 feet.
				35				

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. No obvious soil or ground water contamination. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.



SWEET-EDWARDS/EMCON

T8701.01.GRAYC.JLG.122881

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E- 6
 PAGE 1 OF 1
 REFERENCE ELEV. \pm
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/7/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (IN CORP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	10	1-4-13 (17)		5				0-1.5' Humus in SAND matrix, black, poorly graded fine sand, moist (PT/SP).
								1.5-7' Rubble (brick and concrete) in sandy matrix.
S-2	85	1-2-2 (4)		10				7-30' Poorly graded SAND, light brown, fine to medium grained, moist (SP).
S-3	80	3-5-7 (12)		15				--- Grain becomes medium to coarse at 15-20.5'.
S-4	85	7-11-10 (21)		20				--- Grain becomes coarse, 75% silt at 20.5-30 feet.
				23.0'				--- first water encountered at 23 feet.
				25				
				30				Bottom of boring at 30 feet.
				35				

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. No obvious soil or ground water contamination. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.



SWEET-EDWARDS/EMCON

7870: .51. GRAYC. JLG. 122888

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-7
 PAGE 1 OF 1
 REFERENCE ELEV. 4
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/7/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (IN COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	70	3-3-3 (6)		5				0-20' Poorly graded SAND, brown, medium to coarse grained, trace silt, moist (SP).
S-2	70	4-5-7 (12)		10				
S-3	80	4-5-5 (10)		15				
S-4	80	3-5-6 (11)		20				20-20.25' Silty SAND, brown, fine to medium grained, moist (SM).
				23.0'				20.25-30.5' Poorly graded SAND, reddish-brown, coarse grained, wet (SP). --- color change to black, fine grained at 20.5-20.75 feet.
				25				20.75-20.92' Clayey silty SAND, brown, fine grained, trace silt, moist (SM).
				30				20.92-30' Poorly graded SAND, reddish-brown, coarse grained, trace silt, moist (SP). --- first encountered water, color change to black at 23 feet.
				35				Bottom of boring at 30 feet.

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. No obvious soil or ground water contamination. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.



SWEET-EDWARDS/EMCON

78701.01.GRAYC.S.S.:22888

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-8
 PAGE 1 OF 1
 REFERENCE ELEV. 12
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/7/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
								0-5' Sand, wood, rubble mix, moist (FILL).
S-1	80	2-3-3 (6)		5				5-20.33' Poorly graded SAND, brown, medium to coarse grained, no fines, moist (SP).
S-2	70	3-4-3 (7)		10				
S-3	80	5-5-6 (11)		15				--- grain changes to fine to medium, minor silt at 15 feet.
S-4	90	1-2-5 (7)		20				20.33-21.08' CLAYEY SILT, black, moderate plasticity, minor very fine sand, wet (ML/CL).
				23.5'				21.08-30' Poorly graded SAND, brown, medium to coarse grained, no fines, moist (SP). --- color change to gray-black at 23.5 feet.
				30				Bottom of boring at 30 feet.
				35				

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. No obvious soil or ground water contamination. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.



SHEET - EDWARDS/EMCON

79701.01.GRAYC.JLG.123088

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-9
 PAGE 1 OF 1
 REFERENCE ELEV. 4
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/8/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	80	3-4-4 (8)		5				0-20.5' Poorly graded SAND, reddish-brown, fine to medium grained, trace silt, moist.
S-2	90	3-4-5 (9)		10				
S-3	80	5-6-6 (12)		15				
S-4	30	7-10-12 (22)		20				20.5-21' Silty SAND lens, reddish-brown, saturated (SM).
S-5	80	5-7-7 (14)	25.0'	25				21-25' Poorly graded SAND, brown, medium to coarse grained, trace silt, moist (SP). --- first encountered water at 25feet.
				30				25-30' Well graded SAND, gray-black, fine to coarse, approximately 10% silt, saturated (SW).
				35				Bottom of boring at 30 feet.

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. Minor oily sheen on water and 25-26.5' soil sample. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.



SWETT-EDWARDS/DIXON

78701.01, GRAYCO, JLG, 12/8/88

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-10
 PAGE 1 OF 1
 REFERENCE ELEV. \pm
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/8/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	90	2-3-3 (6)		5				0-8' Poorly graded SAND, brown, fine to medium grained, trace silt, moist (SP).
S-2	90	2-1-3 (4)		10				8-10.5' Silty SAND, black, fine grained, moist (SM). 10.5-11' Clayey SILT, black, low to moderate plasticity, moist (ML).
S-3	80	4-5-5 (10)		15				11-20.25' Poorly graded SAND, brown, fine to medium grained, trace silt, iron-stained decomposed inclusion from 11 to 11.25 feet, moist (SP). --- gray peppered, medium to coarse grained, no fines at 11.5 feet --- color change to reddish-brown, fine to medium grained, trace silt at 15.5 feet.
S-4	90	2-3-3 (6)		20				20.25-21.25' Silty SAND, black, fine grained, moist (SM). --- color change to reddish-brown at 20.75 feet.
S-5	90	3-4-5 (9)		25				21.25-30' Poorly graded SAND, reddish-brown, fine to medium grained, trace silt, moist (SP). --- first encountered water at 25 feet. --- silt fraction increases to approximately 10%, color change to gray-black at 25 feet.
				30				Bottom of boring at 30 feet.

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. Minor oily sheen on water and 25-26.5' soil sample. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.



Sweet's-Edwards/EMCON

78701.01.GRAYC.JLG.:23088

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-11
 PAGE 1 OF 1
 REFERENCE ELEV. ±
 TOTAL DEPTH 30.00'
 DATE COMPLETED 12/8/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	80	3-3-4 (7)		5				0-7.5' Silty SAND, brown, very fine grained sand, moderate plasticity, trace clay, micaceous, minor iron decomposition inclusion from 5.5-6 feet, moist (SM).
S-2	90	4-7-7 (14)		10				7.5-11' Poorly graded SAND, grayish-black peppered, medium to coarse grained, trace silt, moist-dry (SP).
S-3	90	8-12-17 (29)		15				11-13' Silty SAND, brown, very fine grained sand, moderate plasticity, trace clay, micaceous, moist (SM).
S-4	70	8-11-12 (23)		20				13-16' Poorly graded SAND, grayish-black peppered, medium to coarse grained, trace silt, moist-dry (SP). --- grain change to fine to medium, approximately 10% silt, moist at 16 to 20 feet.
S-5	80	11-17-8 (25)		25				20-24' Poorly graded SAND, gray-black with brown and red peppering, coarse grained, approximately 10% fine gravel, trace silt, moist (SP).
				25.0'				24-30' Poorly graded GRAVEL, gray-black, fine gravel, little coarse sand, trace silt and fine sand, wet (GP/GM). --- first encountered water at 25 feet.
				30				Bottom of boring at 30 feet.
				35				

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. No obvious soil or ground water contamination. Drilled to 30 feet to enhance sampling. Backfilled with bentonite.

FRITZ-EDWARDS/EMCON

7811-01.GRAYCO-2-00489

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-12
 PAGE 1 OF 1
 REFERENCE ELEV. 12
 TOTAL DEPTH 35.00'
 DATE COMPLETED 12/9/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N CONG)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	80	2-5-7 (12)		5				0-10' Poorly graded SAND, light brown, fine grained, 5-10% silt, moist (SP). --- silt decreases to trace at 5 feet.
S-2	95	2-5-6 (11)		10				10-14' Sandy silty CLAY, gray, medium plasticity, moist to wet (CL).
S-3	80	4-10-10 (20)		15				14-15.5' Silty SAND, light brown, fine to medium grained, moist (SM). 15.5-16' Poorly graded SAND, reddish-brown peppered, coarse grained, moist (SP).
S-4	90	5-11-13 (24)		20				16-20' Sandy silty CLAY, gray, medium plasticity, moist to wet (CL). 20-21' Poorly graded SAND, gray-black peppered, fine to medium grained, moist (SP).
S-5	80	9-8-25 (33)		25				21-25' Sandy silty CLAY, gray, medium plasticity, moist to wet (CL). 25-27' Poorly graded SAND, gray-black peppered, coarse grained, few to little fine gravels, moist (SP).
S-6	80	13-22-20 (42)		30				27-35' GRAVEL-sand mix, gray-black, gravels fine grained, sand fine to coarse grained, minor silt, moist (GM). --- first encountered water at 32.5 feet. Bottom of boring at 35 feet.

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. Minor oily sheen on water sample. Drilled to 35 feet to enhance sampling. Backfilled with bentonite.



SWEET-EDWARDS/EMCON

78701.01.GRAYC.JLG.C00689

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY R.A. Dixon

BORING NO. SE/E-13
 PAGE 1 OF 1
 REFERENCE ELEV. +
 TOTAL DEPTH 35.00'
 DATE COMPLETED 12/9/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (IN COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1	60	2-30 (NA)		5				0-5.5' Sandy clayey SILT, black, low to medium plasticity, wet (ML).
								5.5-6.5' Brick Rubble.
S-2	90	4-9-12 (21)		10				6.5-10.5' Silty CLAY, black, moderate to high plasticity, moist to wet (OH).
								10.5-15' Sandy silty CLAY, light brown, moderate plasticity, moist (CL). --- red brick rubble at 11.25 to 11.5 feet.
S-3	95	3-7-8 (15)		15				15-20' Silty clayey SAND, light brown, fine grained, moist (SM).
S-4	65	4-6-8 (14)		20				20-25' Poorly graded SAND, grayish-brown, fine grained, trace silt, moist (SP).
S-5	100	2-4-4 (8)		25				25-30.5' Sandy silty CLAY, brownish-gray, moderate to high plasticity, moist (CL).
								--- first encountered water at 30.5 feet.
S-6	120	3-5-8 (13)		30 30.5'				30.5-35' clayey silty SAND, grayish-brown, fine to medium grained, oily sheen on water and 30 foot soil sample, saturated (SM).
				35				Bottom of boring at 35 feet.

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. Minor oily sheen on water sample. Drilled to 35 feet to enhance sampling. Backfilled with bentonite.



SWEET-EDWARDS/EMCON

T8701... GRAYC. JLG. 010489

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY S. Ryman

BORING NO. SE/E-14
 PAGE 1 OF 1
 REFERENCE ELEV. \pm
 TOTAL DEPTH 35.00'
 DATE COMPLETED 1/26/89

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (IN COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
				5				0-30.5' SILTY SAND, light brown, poorly graded, moist to wet.
				10				
				15				
				20				
				25				
				30				
S-1		13-23-28	∇ 32.0'	32				30.5-35' SAND, brown, fine to coarse, minor fine gravel, 30% coarse sand, 30% medium sand, 30% fine sand, rock fragments, wet. --- first encountered water at 32 feet Bottom of boring at 35 feet.
				35				

REMARKS

Drilled adjacent to SE/E-12. Logged by grab sample off auger flights.



SWEET-EDWARDS/EMCON

78701.01.GRAYC.JLG.010789

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY S. Ryman

BORING NO. SE/E-17
 PAGE 1 OF 1
 REFERENCE ELEV. \pm
 TOTAL DEPTH 23.00'
 DATE COMPLETED 1/26/89

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
				5				0-23' SAND, brown, medium to fine, poorly graded.
				10				
				15				
				20				
				22.7				--- first encountered water at 22.7 feet.
				25				Bottom of boring at 23 feet.
				30				
				35				

REMARKS

No samples. Logged from grab samples off auger flights.



SWEET-EDWARDS/EMCON

TS701.01.GRAYC.JLG.020789

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY S. Ryman

BORING NO. SE/E-18
 PAGE 1 OF 1
 REFERENCE ELEV. 7.2
 TOTAL DEPTH 26.50'
 DATE COMPLETED 1/27/89

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
				5				0-26.5' SAND, light brown, medium-to-fine, poorly graded, minor silts, 15% silt, 25% medium sand, 60% fine sand.
				10				
				15				
				20				
S-1		7-7-8		25				--- first encountered water at 25.5 feet.
S-2		3-4-5		25.5'				
				30				Bottom of boring at 26.5 feet.
				35				

REMARKS

Drilled adjacent to SE/E-9.




SWEET-EDWARDS/EMCON

T8701.01.GRAYC.JLG.020789

LOG OF EXPLORATORY BORING

PROJECT NAME GRAYCO Portland, Oregon
 LOCATION See Figure
 DRILLED BY Geo Tech Exploration
 DRILL METHOD H.S. Auger
 LOGGED BY S. Ryman

BORING NO. SE/E-19
 PAGE 1 OF 1
 REFERENCE ELEV. 12
 TOTAL DEPTH 31.50'
 DATE COMPLETED 1/27/89

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
S-1		2-3-4		30 30.5'				0-31.5' SAND, brown, medium-to-fine with minor silt, 15% silt, 30% medium sand, 55% fine, moist. --- color change to gray at 30 feet. --- first encountered water at 30.5 feet. Bottom of boring at 31.5 feet.

REMARKS
 Drilled adjacent to SE/E-3.



SWEET-EDWARDS/ENCON

TS701.01.GRAYC.JLG.020789

APPENDIX E

SOIL QUALITY RESULTS

GRAYCO-R.315 LK
T8701.01

Rev. 1 3/15/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON
SUBMITTED BY: Kent Mathiot
PROJECT: Grayco/T8701.01
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 01/29/89
DATE EXTRACTED: 01/31/89
DATE ANALYZED: 02/01/89
WORK ORDER #: 89163

BTEX Analyses
EPA Method 8020
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		SE/E 15 20-21.5	SE/E 15/16 10-11.5
Lab Code:		163-2	163-3
	Estimated MDL		
Benzene	0.05	ND	ND
Toluene	0.05	ND	ND
Ethyl Benzene	0.05	ND	ND
Total Xylenes	0.05	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Colin Elliott Date 2/15/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON
SUBMITTED BY: Kent Mathiot
PROJECT: Grayco/T8701.01
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 01/29/89
DATE EXTRACTED: 01/31/89
DATE ANALYZED: 02/03/89
WORK ORDER #: 89163

PCB Analyses
EPA Methods 3540/8080
mg/Kg (ppm)
Dry Weight Basis

Sample Name: SE/E 14 Soil SE/E 19 30-31.5
Lab Code: 163-1 163-4

	Estimated MDL		
Aroclor:			
1016	0.1	ND	ND
1221	0.1	ND	ND
1232	0.1	ND	ND
1242	0.1	ND	ND
1248	0.1	ND	ND
1254	0.1	ND	ND
1260	0.1	ND	ND
Total Aroclors	0.1	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by:

Colin Elliott

Date:

2/15/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON
SUBMITTED BY: Kent Mathiot
PROJECT: Grayco/T8701.01
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 01/29/89
WORK ORDER #: 89163

Hydrocarbon Scan
mg/Kg (ppm)
Dry Weight Basis

<u>Sample Name</u>	<u>Lab Code</u>	<u>Estimated</u> <u>MDL</u>	<u>Diesel</u>	<u>Gasoline</u>
SE/E 15 20-21.5	163-2	5	ND	ND
SE/E 15/16 10-11.5	163-3	5	ND	ND
SE/E 19 30-31.5	163-4	5	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by

Colin Elliott

Date

2/15/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon DATE RECEIVED: 12/07/88
SUBMITTED BY: Steve Henshaw DATE ANALYZED: 12/19/88
PROJECT: Grayco/St. John's WORK ORDER #: 881315
SAMPLE DESCRIPTION: Soil

Total Organic Halogens (TOX)
EPA Method 9020
mg/Kg (ppm)
Dry Weight Basis

<u>Sample Name</u>	<u>Lab Code</u>	<u>Estimated MDL</u>	<u>Measured Concentration</u>
SE/E-1-10'	1315-6	1	1
SE/E-2-10'	1315-7	1	2
SE/E-3-10'	1315-8	1	ND
SE/E-4-20'	1315-9	1	ND
SE/E-5-10'	1315-10	1	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dave Siskin

Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon DATE RECEIVED: 12/12-13/88
SUBMITTED BY: Steve Henshaw DATE ANALYZED: 12/19/88
PROJECT: Greyco/St. John's WORK ORDER #: 881333
SAMPLE DESCRIPTION: Soil

Total Organic Halogens (TOX)
EPA Method 9020
mg/Kg (ppm)
Dry Weight Basis

<u>Sample Name</u>	<u>Lab Code</u>	<u>Estimated MDL</u>	<u>Measured Concentration</u>
SE/6-20	1333-9	1	ND
SE/7-10	1333-10	1	1
SE/8-20	1333-11	1	1
SE/9-15	1333-12	1	ND
SE/10-25	1333-13	1	ND
SE/11-15	1333-14	1	ND
SE/12-15	1333-15	1	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dave Zickman Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon DATE RECEIVED: 12/12-13/88
SUBMITTED BY: Steve Henshaw DATE ANALYZED: 12/19/88
PROJECT: Greyco/St. John's WORK ORDER #: 881333
SAMPLE DESCRIPTION: Soil

Total Organic Halogens (TOX)
EPA Method 9020
mg/Kg (ppm)
Dry Weight Basis

<u>Sample Name</u>	<u>Lab Code</u>	<u>Estimated MDL</u>	<u>Measured Concentration</u>
SE/13-10	1333-16	1	1
HA-1	1333-17	1	1
HA-2	1333-18	1	2
HA-3	1333-19	1	ND
HA-4	1333-20	1	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Steve Henshaw Date 12/23/88

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON
 SUBMITTED BY: Steve Henshaw
 PROJECT: Grayco
 SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 01/11/89
 DATE EXTRACTED: 01/11/89
 DATE ANALYZED: 01/12/89
 WORK ORDER #: 89065

PCB Analyses
 EPA Methods 3550/8080
 mg/Kg (ppm)

Sample Name:	12-A	12-B
Lab Code:	065-1	065-2
	Estimated	
	MDL	
Arochlor:		
1016	1	ND
1221	1	ND
1232	1	ND
1242	1	ND
1248	1	ND
1254	1	ND
1260	1	ND
Total Arochlors	1	ND

MDL means Method Detection Limit
 ND means None Detected

Approved by: Dean Spivey Date: 1/13/89

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/EMCON
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 01/11/89
DATE EXTRACTED: 01/11/89
DATE ANALYZED: 01/12/89
WORK ORDER #: 89065

PCB Analyses
EPA Methods 3550/8080
mg/Kg (ppm)

Sample Name:	13-A	13-B
Lab Code:	065-3	065-4
	Estimated	
	MDL	
Arochlor:		
1016	1	ND
1221	1	ND
1232	1	ND
1242	1	ND
1248	1	ND
1254	1	ND
1260	1	ND
Total Arochlors	1	ND

MDL means Method Detection Limit
ND means None Detected

Approved by: Dan Spiceman Date: 1/13/89

Chain of Custody/ Laboratory Analysis Request

DATE 1-11-88 PAGE 1 OF 1

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DISPOSITION: WHITE - return to submitter; YELLOW - info; BLUE - retained by submitter

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Sweet - Edwards/Emcon
SUBMITTED BY: Steve Henshaw
PROJECT: Grayco/St. John's
SAMPLE DESCRIPTION: Soil

DATE RECEIVED: 12/07/88
DATE EXTRACTED: 12/09/88
DATE ANALYZED: 12/15/88
WORK ORDER #: 881315

PCB Analyses
EPA Methods 3550/8080
mg/Kg (ppm) Dry Weight Basis

Sample Name:	SE/E-1-10'	SE/E-2-10'	SE/E-3-10'
Lab Code:	1315-6	1315-7	1315-8
	Estimated MDL		
Arochlor:			
1016	1.0	ND	ND
1221	1.0	ND	ND
1232	1.0	ND	ND
1242	1.0	ND	ND
1248	0.9	ND	ND
1254	0.8	ND	ND
1260	0.7	ND	ND
Total Arochlors	1.0	ND	ND

MDL means Method Detection Limit
ND means None Detected

Approved by Dave Sullivan Date 12/23/88